AUGUST 1953

American Engineer

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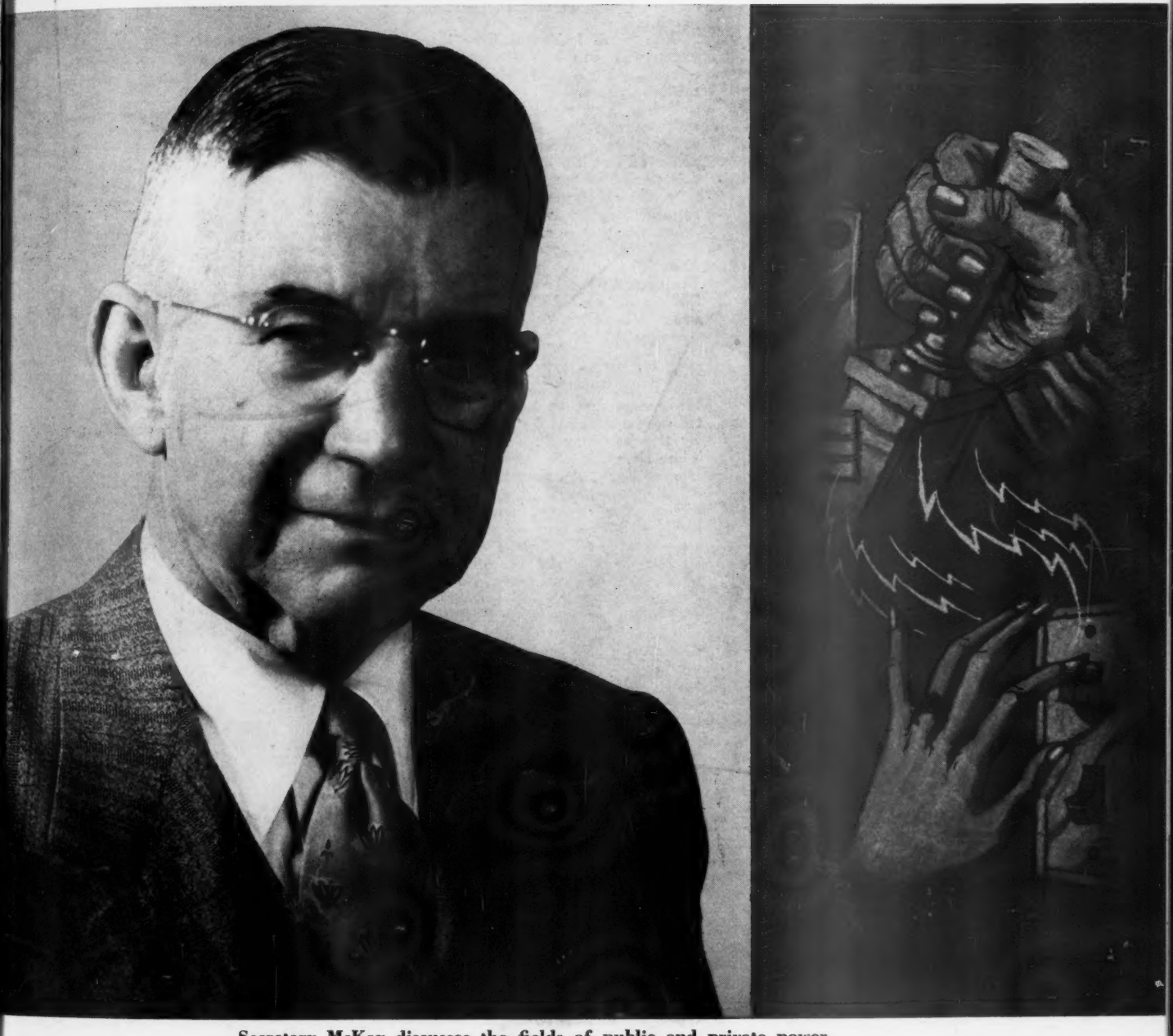
IN THIS ISSUE . . .

● **PUBLIC POWER: A POLICY FOR THE UNITED STATES**

By Douglas McKay,
Secretary of the Interior



Secretary McKay discusses the fields of public and private power

. . . *Also*

Twentieth Century Magic —about air conditioning and the man who made it—

●

Army Acts on Engineer Utilization

●

Plus Washington Bulletins, Special Reports, Late News

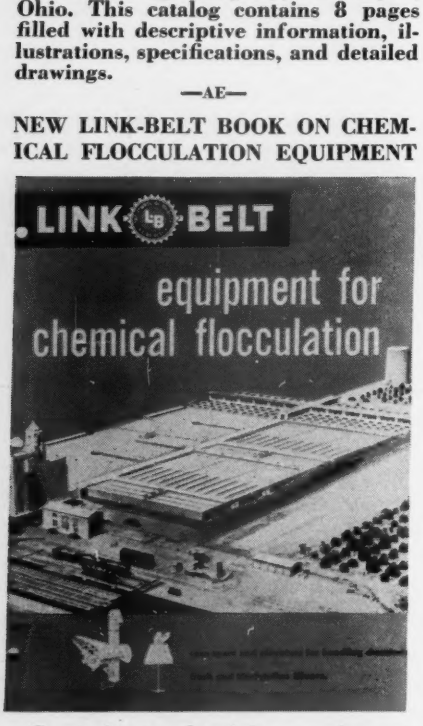
. . . NEW LITERATURE . . .

To help the offering firms determine which literature you require, when requesting an item, be sure to list all specifications shown . . . and say you saw it in the AMERICAN ENGINEER.

METAL WALL PANELS—A new catalog prepared primarily for engineers, architects, and general contractors, describing Steelcraft Insulated Metal Wall Panels, in brilliant 4-color process, is now available from the Steelcraft Manufacturing Company, Rossmoyne, Ohio. This catalog contains 8 pages filled with descriptive information, illustrations, specifications, and detailed drawings.

—AE—

NEW LINK-BELT BOOK ON CHEMICAL FLOCCULATION EQUIPMENT



Conveying and mixing equipment for chemical flocculation at water, sewage and industrial waste treatment plants is described in a new Book No. 2442, published by Link-Belt Company, 307 N. Michigan Ave., Chicago 1, Ill.

Installation photographs show many types of Link-Belt conveying and elevating equipment for economical handling of bulk or packaged chemicals. Two types of mechanical mixers, Link-Belt flash mixers and Link-Belt straightline mixers, for the two chemical mixing operations, are described in detail. Inserts contain general arrangement drawings and specifications.

A copy of Book 2442 will be sent to interested readers on request.

—AE—

LABORATORY APPARATUS—A new 72 page catalog recently published by Soiltest, Inc. describes and illustrates over 800 items of apparatus for engineering tests of soils, concrete and bituminous materials.

The extensive soil testing equipment section of the catalog presents information on Triaxial, Consolidation, California Bearing Ratio, Compaction, Pore Pressure, and all of the standard apparatus of field and laboratory engineering tests of soils. A special section is devoted to apparatus for chemical and agricultural tests of soils.

Write for Catalog No. 53, Soiltest, Inc., 4520 W. North Avenue, Chicago 39, Illinois.

DIVIDENDS FROM ELECTRIC TYPEWRITERS—Proof that the six primary dividends of electric typing can be realized is given in a new 16 page book offered by Remington Rand Inc.

Designed for top management analysis of high typing station costs, "The Dividends you get with Remington Electric Typewriters" points the way to better looking typing, reduction in typist fatigue and increased typing production.

The book indicates how interested executives can participate in a new operating ratio study program and establish profitable electric typwriter policies. The program offers a free written report of specific benefit and production increases which can be achieved in their own offices. Basis for this proof of profit is a mass test of new electric typewriters, evaluated on regular typing work, to accurately determine savings.

Write Remington Rand Inc. 315 Fourth Avenue, New York 10, New York for a FREE copy of booklet #RE 8612 and/ or FREE written report on specific benefits.

—AE—

DATA CARD OUTLINES ARC WELDING PROCEDURES—A new reference table designed to help fabricators of tubular materials has been published by the Tubular Products Division of The Babcock & Wilcox Company, Beaver Falls, Pa. Known as "Summary of Recommended Arc Welding Procedures for Various Steel & B&W Croloy Combinations," it outlines pertinent details to be observed in joining similar and dissimilar alloys by arc welding. It covers carbon, intermediate chromium molybdenum alloy steels and stainless steels and outlines the electrodes to be used and suggests the preheating and postwelding heat treatments to be employed in obtaining satisfactory results. A handy reference table, it will be of interest and value to all those involved in the welding of materials.

The data card, TDC-155, is available without charge upon request to the division's general sales offices at Beaver Falls, Pa.

—AE—

BROCHURE ILLUSTRATES HEAT-TREATING FURNACES—A new 8-page, two-color brochure containing a photo portfolio of outstanding installations of gas, oil and electric heat-treating furnaces is available from Lee Wilson Contracting Company, 20005 West Lake Road, Cleveland 16, Ohio.

Illustrated are more than 14 furnace types including roller hearth, chain conveyor, belt conveyor, overhead slot-in-roof, car bottom, pit, strand heating and aluminum soaking pit for use in the following processes with and without protective atmospheres including annealing, austempering, brazing, carburizing, forging, galvanizing, hardening, homogenizing, malleablizing, martempering, nitriding, normalizing, pearlitizing, vitreous enameling, etc.

Copies of the new folder are available from the manufacturer.

SCHEMATIC BULLETINS ON NEW PIPPIN EXCAVATOR — Schematic Bulletins are available on a completely re-engineered model of the tractor-powered, hydraulic PIPPIN EXCAVATOR, Deluxe Model WF-104. It attaches to light tractors such as Ford and Ferguson, and is being adapted to other makes of tractors.

It excavates over 10 ft. deep, and will lift to a height of 12 ft. for truck loading. Its 16-ft. reach behind the tractor means that a 10-ft. long trench can be dug without moving the tractor. Wider side swing (12½ ft. from center) allows piling of dirt farther from the excavation.

Bulletin with schematic drawings and complete specifications may be obtained from Mr. William J. Beresford, Pippin Construction Equipment, Inc., White River Junction, Vermont.

—AE—

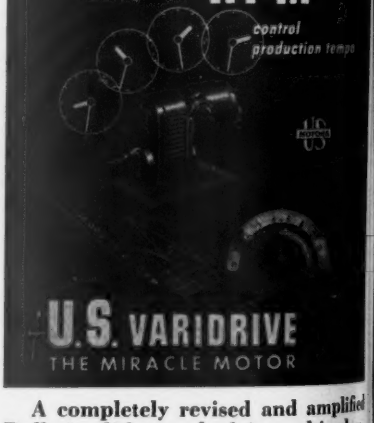
NEW BROCHURE TREATS HARD-FACING—A comprehensive and analytical study of hard-facing, its application and its wear-resisting qualities wherever impact and abrasive conditions exist, is contained in a new 52-page brochure published by the Mir-O-Col Alloy Company of Los Angeles, California.

This report incorporates the latest data and instructions on hard-facing.

Copies of this graphic 52-page brochure may be obtained by writing to the Mir-O-Col Alloy Company, 312 North Avenue 21, Los Angeles 31, California.

—AE—

VARIABLE SPEED MOTOR BULLETIN FEATURES IMPROVEMENTS



A completely revised and amplified Bulletin, lithographed in multi-colors, has been issued by the manufacturers of Varidrive motors. It outlines several scores of reasons why variable speed motors can be used to improve production and includes illustrations of all types of Varidrive motors. It includes 80 colored illustrations of motors, mechanical features, remote controls, etc.

A copy of this interesting 16-page Bulletin (No. 1797) may be obtained by writing to U. S. Electrical Motors Inc., Box 2058, Los Angeles 54, California.

Letters

Making NSPE Work . . .

Dear Editor:

I want to celebrate the arrival of my first issues of your excellent magazine by "letting off a little steam" in your "Letters" Department.

During the recent Pennsylvania Annual Convention in Harrisburg, NSPE President Coleman made some remarks which impressed me very much. Unfortunately, they probably did not impress enough of our engineers. One point made was that a very large part of the total of Registered Engineers have not joined our Society and, in fact, have abstained from becoming members of any engineering society. These people are likely to join finally a technical union. From my own experience, and from talking with many other rank and file engineers, I would like to state some of the main reasons for this unfortunate situation.

In the first place, most technical societies are dominated too much by the heads or key men of large firms. These men, to a great extent, have lost contact except in a supervisory manner, with the needs and desires of 75 per cent of the professional engineers, who are either minor employees or have small businesses. In my opinion, the more prominent engineers should remain in the background to a greater extent than they do at present.

Another feature which holds membership down is the expense of being an active Member of a Society. in addition to the high membership dues, there is usually an expensive luncheon to buy if you attend a local meeting. Frankly, I do not believe that many of these costs are justified. All needless expenses to do with a meeting should be trimmed if a more representative membership is desired.

My last point is the apparent flaunting of the engineer's "Code of Ethics" by sometimes prominent engineering firms, particularly that part about ". . . he will not advertise his work or merit in a self-laudatory manner." This type of unethical advertising has been very prominently displayed by several of our largest engineering companies in recent issues of engineering magazines. One wonders sometimes if this "Code of Ethics" is taken seriously by those who are strong enough to violate it.

The National Society of Professional Engineers, with its local chapters, has a rare opportunity of becoming the major engineering group, and of doing much good where others have failed, if it can convince the great mass of average professional engineers that it is meant for them.

WINSTON H. CARRINGTON, P.E.
Camp Hill, Pa.

Attention Letter Writers:

►Every month brings us more and more letters from our readers and we are happy to have them, but we now find ourselves very pressed for space.

So . . .

Please keep letters short and to the point. If you want to write at greater length, submit your piece to the "Professional Postscripts" feature.

—The Editors.

Salary the Answer? . . .

Dear Editor:

I make specific reference to your June 1953 issue of AMERICAN ENGINEER wherein Doctor Edwin S. Burdell presented a paper entitled "We Must Keep Our Teachers."

First I would like to preface my remarks by stating that I have always held and will continue to hold in high esteem my sincerest respect for our teachers in the general realm of education.

In reading the Doctor's paper I was merely reminded of a problem which has been in existence for some time; only his presentation was complete with uncontrollable worry, anxiety and wringing of hands.

The Doctor's approach to this problem appears to be loaded with delicate and restrained action. I do not understand why such a recognized leader in the field of education stresses such an approach under our current highly competitive conditions. At best a relatively few conscientious and cooperative industrialists would be willing to assist. The response, in my estimation, would be a weak one which would only tend to progressively worsen the situation.

How long must our leaders in education continue to hide demurely behind a cloak of academic dignity? Is it not time we applied some sound engineering and economic principles to this problem? I am sure the Doctor has heard of the basic law of supply and demand. Nowhere in his article does he mention the matter of adjusting the pay scale of the teaching profession.

I am unable to understand the continued conservative approach of our educational leaders. Perhaps someone can enlighten me.

JAMES CLERICUZIO, P.E. & L.S.,
Washington, D. C.

The 3 R's . . .

Dear Editor:

The Postscript by President Hatcher of the University of Michigan, in your June 1953 edition, deserves more than passing notice by engineers.

When criticizing their lack of erudition, one should not overlook the fact that engineering students and graduates are the products of our educational system. He would do well to reflect on the elementary causes.

Throughout our educational system, there is too much emphasis on passing courses and too little on subsequent practice. "Passing" and "forgetting" become synonymous, because practice is not required. Too many college instructors overlook errors in spelling, syntax and arithmetic, either knowingly or to mask their ignorance.

It is most distressing to a practising engineer when he employs a young engineering graduate and finds that the boy has mislaid his elementary education—can not write legible script; can not parse a sentence or punctuate a paragraph; revels in ambiguity and equivocation; can not add, subtract, multiply or divide without an electric or female computer; and needs to be educated from the first grade up. The lad's alma mater assumed he had passed and forgotten those childish things which are so essential in earning a living as a professional engineer.

Where would the legal and medical professions be if their professional schools were not manned by practising attorneys, physicians and surgeons?

Now, that all States and the District of Columbia have statutes requiring registration and licensing of professional engineers, the next important effort of the profession

(*Continued on page* 5)

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American Engineer

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Industrial liberty, like civil liberty, must rest upon the solid foundation of law. Disregard the law in either, however good your motives, and you have anarchy.

—JUSTICE LOUIS BRANDEIS

•

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NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS FOUNDED 1934

• SPECIAL ARTICLES

Public Power: A Policy for the United States 9
By Douglas McKay, Secretary of the Interior. Every professional engineer will be interested in what the present Administration's policy will be in regard to this controversial issue.

Twentieth Century Magic 17
In August, 1953, we spend summer days in air conditioned offices, theatres, and restaurants. This is about the engineer who started it all.

Army Acts On Engineer Utilization 19
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Letters

(*Continued from page 3*)

should be directed toward elevating schools of engineering to professional status. That does not require that they be "graduate schools." It merely requires that, in order to be an accredited institution, each college or university department of engineering shall be administered by a registered professional engineer who has been a successful practitioner at least fifteen years, and that every junior and senior course in engineering subjects be taught by registered engineers who have each practised professional engineering at least ten years after graduation.

Since engineering depends so much on science, it may be hoped that professional schools of engineering will eventually set a precedent by giving preference to holders of degrees in Pedagogy, the science and art of teaching, when selecting engineers to be faculty members.

Superficial arguments and disputations are wearisome, as well as futile. Let's get down to fundamentals in engineering education, like we do when designing any other engineering project.

FLOYD N. ROBINSON, P.E.
Seattle, Wash.

Employment Agencies . . .

Dear Editor:

Today, when required engineering services are greater than the available supply of competent engineers to do the work, and when the one time most unethical agencies advertise that the employer will pay the recruitment fee, any of the following remarks will have little meaning to a boy who has an offer of $500.00 per month upon graduation. Thus, may it ever be.

Yet, it is a function of the Professional Engineering Societies, to project themselves far enough into the future to call forever a halt to unethical hiring methods. . . .

The following actions describe real, not fictitious, situations:

1. In the search for a repeat fee, individuals in commercial agencies do have agreements with individuals in companies to employees replaced periodically.
2. In order to run attractive advertisements, commercial agencies do list nonexistent jobs, as well as some the development of which is highly problematical.
3. To test the lowest going market value for technical assistance, companies do delegate their recruitment problems to a commercial agency rather than advertise under their own name.
4. . . . companies frequently utilize or establish a commercial agency to collect a fee from every person assigned to work.

By promoting the efforts of the Engineering Societies Employment Service, the Personnel Placement Bureaus of some State Professional Societies (for example, The Ohio State Society), the State Employment Services, and by giving full publicity to any shady transaction completed or attempted toward any novice in dealing with a commercial agency, great good (can be accomplished) and great respect can be built . . .

ELMER N. IBERG, P.E.,
Marion, Ky.

More On Roads . . .

Dear Editor:

In a recent issue of your magazine, there was a very interesting article about Roman roads, in which this question is asked—"Could it be that our highway system could, with profit, borrow from the Roman Roadbuilders?" A request for opinions was also made. Hence the reason for this letter.

It is the studied opinion of the writer, that our present-day highway engineers could profit but little from studying those old roads.

In the first place, the mehods used in constructing those old roads is so far outmoded that for the present day engineers to revert to a study of their composition and construction would be similar to a decline in civilization to the manners, customs and habits of generations past.

It would be quite a project for one to find a small number of people, now enjoying present-day conveniences, who would be willing to return to the days of cooking in open fireplaces, lighting with candles and kerosene lamps, warming by fires fueled with wood chopped from the forest by their own hands and riding in animal-drawn vehicles.

Still this would be no more out of place, than for engineers to revert to the "Roman-style" method of road building, when designing and constructing highways for today's traffic.

It is quite true that some of the pioneers in road construction, such as Mac Adam, designed types of road construction that are still in use today, on an improved, enlarged and modified scale, and that these types of construction are still superior to many new types that have been developed and used. in recent years. But to design roads, today. similar to those of the Romans, and those of the French in the 1700's, would be utterly out of consideration.

However, in years past, a study of those roads has enabled highway engineers, of today, to improve design and construction of

(*Continued on page 27*)

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Professional News in Capsule Form

A. A. Potter Honored by Agricultural Engineers • Commerce Department Plans Business Services Network • Industrial Equipment Acquisition Research Center Planned • Columbia Engineering Graduates' Salaries Reported • Other Items of Interest

The Cyrus Hall McCormick Gold Medal of the American Society of Agricultural Engineers has been awarded to NSPE member Andrew A. Potter of Lafayette, Indiana, Dean of Engineering at Purdue University. The award was presented to Dean Potter, in recognition of his engineering achievements in the field of agriculture, at the ASAE's annual dinner held recently in Pittsburgh's Hotel William Penn.

At the same time, the John Deere Gold Medal was awarded to Dr. Orson W. Israelsen of Logan, Utah, head of the Utah State Agricultural College's Irrigation and Drainage Engineering Department.

* * *

Secretary of Commerce Sinclair Weeks announced in a recent speech before the Harvard School of Business Administration that his Department is planning to organize a network of twenty industrial councils led by top executives from business and industry, who will serve without pay. This "cooperative agency," the Commerce chief said, will be a clearinghouse of information for business and advice from business.

"Private business, of course," the Secretary stated, "cannot dictate Government policy and plans, but through the proposed business services agency it will be in a position where it can effectively approve or disapprove of the implementation of such policy and plans from the standpoint of their practical workability in everyday industrial operations."

* * *

A national center to conduct education and research in the methods of industrial equipment acquisition and replacement will be established this fall in the Department of Business and Economics at the Illinois Institute of Technology. Plans for the center were announced jointly by the presidents of the two sponsoring organizations—Dr. John T. Rettaliata of the Illinois Institute of Technology and William J. Kelly of the Machinery and Allied Products Institute.

"A scientific approach to the acquisition of new equipment and replacement of worn-out or obsolete equipment is of prime importance to the success of every business enterprise," they said. "The general application of sound equipment policies is also basic to the continued industrial leadership of the United States and is inextricably bound into our national security. Thus, a better understanding of the techniques and applications of equipment policy at one and the same time serves private enterprise and fulfills a compelling public interest."

The National Center of Education and Research in Dynamic Equipment Policy, as it will be called, will be housed in one of the new buildings on I.I.T.'s campus in Chicago.

* * *

The average starting salary earned by 1952 graduates of the Columbia University School of Engineering was $4,000 yearly, according to the results of a survey made by the Columbia Engineering Quarterly. The average at which 1953 graduates are starting is about $4,300, according to survey indications. The starting salary figures released by Columbia cover those with only the B.S. degree; graduates holding Master's degrees started at an average of $5,000 or more.

It was also noted that those graduates who started at lower salaries in recent years tended to get bigger raises and, after a year or two, were earning as much as those who started at higher salaries. The rate of turnover was lowest among chemical engineering graduates and highest among civil engineers.

* * *

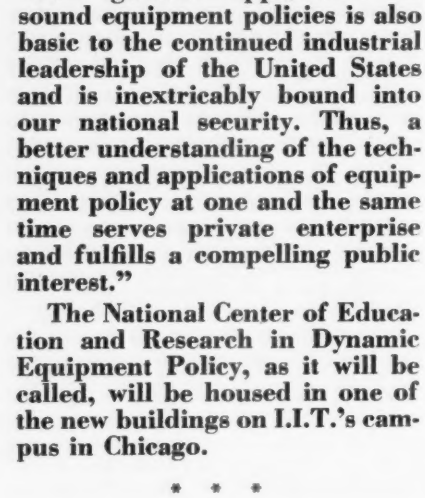
Former Defense Electric Power Administrator James F. Fairman has been awarded the honorary degree of Doctor of Engineering by his alma mater, the University of Michigan, in recognition of the fact that "he has fulfilled the high promise of his academic years." Mr. Fairman, an NSPE member, is also a Fellow of the American Institute of Electrical Engineers. In addition, he holds the Interior Department's Distinguished Service Award.

* * *

Recruitment of discharged servicemen for industry is beginning to taper off, according to a recent story appearing in the Wall Street Journal. This is partially due to stiffer Defense Department rules restricting interviewing in separation centers. The Journal reports that one company is now trying to contact men trained in engineering or electronics by setting up offices for interviewing in towns near the separation centers; but another well-known firm is no longer seeking out prospective employees because its personnel needs are declining.

* * *

Wilbur A. Dexheimer, a Denver engineer, has been sworn in as the new Commissioner of the Bureau of Reclamation. Prior to his appointment to the new post, Mr. Dexheimer, a graduate of the Colorado Agricultural and Mechancial College, was assistant chief engineer for construction in the Denver office of the Recla-



"I can hardly wait until we start construction on that new dam!"

mation Bureau. He has been a Civil Service employee of the Bureau since 1928, with the exception of four years he served with the Army Engineers during World War II and a brief period spent as a consulting engineer for an American company in China after the war.

* * *

Adequate wiring in homes and business premises will be the theme of the Second National Electrical Industries Show, sponsored by the Eastern Electrical Wholesalers Association, to be held September 29 through October 2 in the 69th Regiment Armory in New York City. Stressing "safety through adequate wiring," the show will launch a nationwide drive aimed at uniting engineers, architects, manufacturers, distributors, utility companies, and others in a safety program to encourage the modernization and improvement of wiring systems.

Pointing out that fire destroyed $730,084,000 worth of property in 1951 and $815,134,000 worth in 1952, the sponsors of the show state that approximately 12 per cent of these totals can be attributed to fires resulting from electricity and electrical power-consuming devices, emphatic proof of the need for greater safety-consciousness where electricity is concerned.

* * *

Benjamin F. Fairless, chairman of the board of directors of U. S. Steel, has been named 1953 Business Statesman of the Year by the National Sales Executives, Inc. The award was made at the organization's eighteenth annual convention in Atlantic City "in recognition of his statesmanlike balancing of the delicate relations existing between management and employees in an industry vital to the entire American economy."

Mr. Fairless, who has an engineering background, recently wrote about this industrial relations problem in the March, 1953, *American Engineer* in an article entitled "We Cannot Survive with Labor - Management Strife."

* * *

Now as never before, purchasing and engineering must work togther to keep down company production costs, said Vincent de P. Goubeau, speaking recently before the annual meeting of the Standards Engineers Society in New York. Mr. Goubeau is vice president in charge of materials, Radio Corporation of America, RCA Victor Division.

A product can be priced out of competition, he warned, unless a company has an effective standardization program both for materials and parts that go into the company's product and in that nonproductive area of a company's operations that supports production.

The 1953 National Technical Conference on Lighting, sponsored by the Illuminating Engineering Society, is scheduled for the Hotel Commodore, New York City, September 14-17. Everett M. Strong of Cornell University is president of the organization.

* * *

In an effort to catch up with the post World War II boom in enrollments, American universities added 865 new buildings last year at a cost of $840 million, according to a recent story appearing in Architectural Forum. Even so, the article reports, there is a continuing shortage of college buildings; and the problem of financing for both special purpose buildings and dormitories that will be needed to handle increased enrollments over the next ten years remains acute.

The magazine estimates that the 1954 over-all enrollment of college students will be about 2.25 million, equal to the peak year 1947.

* * *

Rodney D. Chipp, director of engineering for the Du-Mont Television Network, has been elected president of the Technical Societies Council of New York, Inc. He succeeds T. Ralph Leadbeater, director of safety for the Todd Shipyards, in the Council office.

Mr. Chipp, who represents the Institute of Radio Engineers in the Technical Societies Council, is also a member of the New York Chapter, New York State Society of Professional Engineers.

Roy W. Lessard, Assistant Chief of Design. Has had extensive aeronautical design and structures experience with many leading aircraft manufacturers and is part of the Fairchild engineering team.

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ENGINE AND AIRPLANE CORPORATION
FAIRCHILD *Aircraft Division*
HAGERSTOWN, MARYLAND

Four Italian naval engineers are on a two-month tour of the United States as guests of the Mutual Security Agency, to gather information about American developments that will benefit the Italian shipbuilding industry, now being revived after partial destruction during the war.

The group recently spent two days at the Stevens Institute of Technology where they studied the organization and operation of the college's Experimental Towing Tank Laboratory.

* * *

The Fuertes Graduate Medal of Cornell University's School of Civil Engineering has been awarded to Alfred L. Parme, a staff member of the Structural and Railways Bureau. Portland Cement Association. The gold medal is given annually to the Cornell civil engineering graduate who has published the most meritorious technical paper during the year. Mr. Parme's award was made on the basis of his work on the manual, "Design of Cylindrical Concrete Shell Roofs," a project of the Structural Division on Masonry and Reinforced Concrete, American Society of Civil Engineers.

It's Good Business To Check American Engineer Ads for New Products. New Processes. New Literature.

Minn. Conducts Successful Legislative Program

A highly successful effort in the field of legislative liaison has been reported by the Minnesota Society of Professional Engineers. Because of its interest in a number of bills pending before the state legislature during its last term, the Society set up a special committee under the chairmanship of Ted Waldor of the Capitol Chapter. The purpose of the committee was to ensure proper understanding of the Society-backed proposals and to acquaint individual legislators with their aims and objectives. Also taking active roles in putting the committee program into effect were MSPE President W. L. Hindermann, National Director T. S. Thompson, and Executive Secretary H. E. McWethy.

In line with their efforts, ten bills of special interest to the profession were passed by the Senate and House and signed by Governor C. Elmer Anderson. They included: a revision of the Public Employees' Retirement Law; a Civil Service cost-of-living adjustment; authorization for Ramsey County to do highway work for any city, village, or town therein under specified restrictions; increasing the term of County Engineers from two to four years in all counties except Hennepin, Ramsey, and St. Louis; providing that the pay of County Surveyors is to be fixed by the Board of County Commissioners instead of by statute, and, under the same measure, requiring that survey records be kept at the office of the County Surveyor; authorizing the City Council of St. Paul to fix salaries of appointive employees of the city; eliminating the office of County Surveyor and establishing the office of County Engineer of Ramsey County; creating a commission to study water conservation, flood control, and drainage problems of the state; authorizing restricted employment of consulting engineers on certain highway work; creating a commission to study the state highway system; and the inclusion of a topographic mapping appropriation in the appropriation for the Conservation Commission.

Several additional bills that had MSPE backing did not go through during the legislative session; but the problems involved were brought to the attention of the legislators and the public and, Mr. Waldor points out, much valuable ground work has been laid preparatory to their reintroduction at the next meeting of the legislature.

Additional significance has also been attached to the effectiveness of the MSPE program because this was the first legislative session at which the Society did not have the active support of the Minnesota Federation of Engineering Societies. The Federation has lately withdrawn from legislative work because of the tax status of certain of its member organizations.

NSPE Urges Tax Cuts for Professional Education

Expenses incurred by professional engineers and other professional persons in the pursuit of higher education should be allowable deductions for income tax purposes, NSPE has told the House Ways and Means Committee. The Congressional body is now conducting extensive hearings on a series of proposed revisions to the tax laws. The NSPE statement follows:

One of the commonly accepted and deep-rooted beliefs of the American people is that our high standard of living and our national welfare is geared to and dependent upon our being an educated people. This basic principle, extending back to our Founding Fathers, is no longer questioned by the people or the Congress; yet it is a strange fact that the tax laws contain provisions which actually militate against this principle, particularly in the field of higher education, graduate education, and special study.

The interest of this organization in the problem lies in the fact that it is composed entirely of professional persons who possess professional collegiate degrees in all phases of engineering and science and many hold masters and doctors degrees. It is well known, however, that in engineering and science, as in other professional fields of learning, there are ever-changing developments and new information is constantly being brought to light. Members of the professions have the desire and the duty to continually improve their knowledge and keep up-to-date with the advance of knowledge in their fields.

One of our many interests along these lines lies in contributing to higher education in the engineering and scientific fields, realizing that the great technological progress of this nation will suffer very gravely if the supply of engineers and scientists delving ever-deeper into the unlocked mysteries of nature is not maintained and constantly increased.

In recent years there have been many studies and reports by distinguished bodies emphasizing the above point and particularly citing the importance of graduate work in the field of higher education. The most recent valuable contribution along this line is from the National Manpower Council, a distinguished group appointed by President Eisenhower, when he was head of Columbia University. In their report, "A Policy for Scientific and Professional Manpower," it is stated:

"The cold war and the responsibilities which fall to the United States as the most powerful nation in the free world, have inspired a unique concern with the adequacy of its resources of scientific and professional manpower. There is a growing appreciation of the significance of these highly trained persons in the country's normal life and its future progress, as well as in the present program of partial mobilization. This is the first step toward a public recognition that the development and effective utilization of the nation's resources of scientific and professional manpower constitute a new and challenging issue of public policy."

The income tax laws are presently at variance from these accepted principles with regard to continuation of higher education by individuals. If a manufacturer expends money to improve his product, the cost is clearly deductible. But if an individual engineer, scientist, or other professional person, expends his own money to improve his store of knowledge, there is considerable doubt that he may deduct the expenses incurred. Yet the improvement of products and the development of new products depends upon the ability of individuals to acquire the knowledge by study and research which must precede the manufacturer's activities. This condition is certainly not conducive to the encouragement of additional study at their own expense by individual engineers and scientists as well as by other groups. If such educational expenses were clearly deductible for income tax purposes, many more persons would be encouraged to undertake graduate study and special courses of higher instruction and thus contribute, not only to their own knowledge, but to that of the entire economy. Also, it may be noted that income studies bear out the fact that those with the greatest fund of knowledge generally have the highest incomes in their particular fields. Hence, it is logical to conclude that the fostering of additional and special studies by those desiring it, will lead to their economic betterment and consequently, to higher income taxes for the government.

Recent court decisions, such as that of *George G. Coughlin v. Commissioner of Internal Revenue*, decided April 14, 1953, by the United States Court of Appeals for the Second Circuit, may indicate a broader and more liberal interpretation of the present law on this point, but a close reading of the Coughlin Case leaves considerable doubt that the ruling of the court would apply in many situations. The Court noted —". . . how dim a line is drawn between expenses which are deductible because incurred in trade or business, i.e., because professional, and those which are non-deductible because personal." The decision allowing the educational expenses of the taxpayer in the particular instance was based, it would appear, on the finding that ". . . the information acquired was *needed* for use in a lawyer's established

(*Continued on page* 39)

PUBLIC POWER -- A POLICY FOR THE UNITED STATES

By

DOUGLAS McKAY

Secretary of the Interior

No one is more acutely aware than I that the question of public power constitutes one of the most delicate and dangerously explosive problems of our time. There is surely no other subject on which there are so many divergent shades of opinion. The mere mention of it is enough to provoke fiery emotional reactions among those who oppose it and a similar response among those who favor it.

Far too many people are confused as to just what it is and what is being done about it. Far too few try to sweep aside the miasma of misunderstanding to get at the facts in the case. And, after all, it is the clear, definite knowledge of all the facts that must guide our decisions and our actions.

Perhaps more than any other professional group, engineers are intensely interested in the power question. They have made outstanding contributions to the development of our power resources with both private concerns and public agencies, and the country as a whole will continue to need and utilize their services in both fields. Because of this, and because their professional advice will be so often sought as the power question comes up for discussion in various areas, they have, I believe, a special responsibility to help us consider this important problem in a straightforward, unbiased manner with the best interests of the nation at heart.

Public power is here and it is going to stay and I cannot agree with the protests of some people who say the Government should get out of the power business entirely. They are entitled to their thinking, and I don't quarrel with it but I want to do my own thinking, and that has led me to the conclusion that public power has been a benefit to the people and will continue to be a benefit.

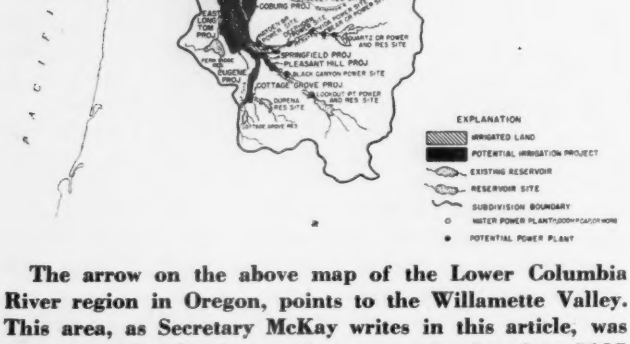
Now I do not like monopoly in any form. I do not like monopoly—whether it is private monopoly or Government monopoly. There is ample room in this nation for the development of both private and public power, and there is no reason why they cannot work side by side in a partnership of mutual direction—greater service to a greater number of people.

Out in the Pacific Northwest, for instance, we have a power grid system under which all types of agencies generating power deliver that power into a grid over which it is moved to the customers.

The Bonneville Power Administration operates that grid, and it carries power that is produced by the Army Engineers at Bonneville Dam, the Bureau of Reclamation at Grand Coulee Dam, and surplus energy that is produced from time to time by various local publicly-owned

Officials of the Philadelphia Electric Company in Pennsylvania plan their expansion programs with the help of a huge aerial map. Private power interests are doing a good job, the author says.

The arrow on the above map of the Lower Columbia River region in Oregon, points to the Willamette Valley. This area, as Secretary McKay writes in this article, was the scene of a flood control program developed in 1935 by a local citizens group called the Willamette Valley Project Committee.



On the map shown above the arrow is aimed at the much discussed Hells Canyon site in Idaho. The map is of the Central Smoke River region.

Editor's Note: **The maps on this page are from a Bureau of Reclamation report issued during a previous national administration and they do not necessarily reflect present plans of the Department of Interior.**

and privately-owned utilities. This power is transmitted to various retail distribution systems that are operated in some instances by publicly-owned utilities and in other instances by privately-owned ones. The grid also furnishes power to a number of large industries.

THERE is room there for all of them, and they are working together toward their one goal of greater production to meet a rapidly increasing demand for electric energy. The yardstick in use out there, and which is the only logical control measure anywhere, is in the agreements which exist between the public power agencies and the privately-owned agencies. Neither side should be permitted to take advantage of the other. The agreements must be fair to all concerned or the ultimate goal cannot be reached.

Out on the Columbia River system, where there is something like 40 per cent of the potential hydroelectric power in the nation, the Federal Government is engaged in building many dams. There is McNary Dam. There is Chief Joseph Dam. There is The Dalles Dam. There is the Palisades Dam. The first three are on the Columbia River. The Palisades Dam is on the upper Snake. All will soon be developing power in that area, and I will back to the utmost the efforts to continue Congressional financial support for these projects.

McNary, Chief Joseph and Palisades Dams are well on their way to completion. The Dalles Dam is just getting under way. The latter dam is one of the most important in the regional development of the Columbia River Basin and nothing should be permitted to stand in the way of its early completion.

Recently, however, you have heard much about Hells Canyon. I note that some writers have said the Secretary of the Interior has given away the last big power site in Hells Canyon, but actually no such thing happened. What I did was to withdraw the Department of the Interior's petition of intervention against the application of the Idaho Power Company before the Federal Power Commission.

That Commission—and not the Secretary of the Interior—is the authority which grants licenses for water power development. If the Federal Power Commission sees fit to grant the license to the Idaho Power Company, that is strictly up to that body.

In my book, the decision should be made by the body legally entitled to hand it down. Then if the Idaho Power Company obtains its license and proceeds with the construction of the Oxbow Dam and the other two dams needed to complement that structure, there will still be room on the Snake River for tremendous public power development.

Below Hells Canyon—and I speak of that as the site of the dam recommended by the Bureau of Reclamation in the previous administration—there are other excellent sites. There is the site at Mountain Sheep which engineers consider to be an excellent one, and below that is Nez Perce which many engineers contend is the best site of all on the river.

HELLS Canyon must be approached from a realistic viewpoint. Any other is pure fallacy. Twice in a Democratic Congress the program for Hells Canyon Dam was defeated, once by a vote in the Senate and once when the bill was indefinitely postponed in the House Interior Committee. Congress did not see fit to appropriate the tremendous sums needed for Hells Canyon or even to authorize the project.

The discussions of Hells Canyon have often become emotional and this has led to the public's receiving a

very incomplete picture. However, let me cite some of the facts. In order to make the Hells Canyon Project work and produce the benefits for which it has been credited, it would be necessary to build the dam and the powerhouse at an estimated cost of $357,000,000. Transmission lines costing $144,000,000 would have to be constructed, and generators and turbines would have to be added to several dams downstream for another $59,000,000. Another part of the project calls for the expenditure of an additional $283,000,000 to provide irrigation benefits for a project which is in no way physically related to Hells Canyon but which is to be subsidized by the profits from the sale of power. Thus the total estimated cost of the Hells Canyon Project itself becomes $843,000,000.

This is not all. Five of the large dams downstream from Hells Canyon which are to profit from the flood waters stored in Hells Canyon Dam have not yet been started. The estimated cost of these five projects, not including interest during construction of transmission lines, is another $881,000,000. While these five dams will presumably create benefits of their own sufficient to pay for their cost, it is necessary that they be built before all the benefits credited to Hells Canyon can be realized. Therefore, if all of the benefits that Hells Canyon is supposed to create are to be achieved, the Federal Government must spend not less than 1.7 billions of dollars.

At a time like this when the Federal budget is in its present state, what would you do if you were in the Congress? Would you commit yourselves to spending that kind of money now? Or, on the other hand, if a private utility is ready and willing to do a comparable job and meet the rigid requirements of the Federal Power Act, would you stand in the way if the Power Commission saw fit to issue a license?

Some people have suggested Hells Canyon is a symbol in the fight between public and private power, but I do not believe that to be the case. What the people want in that area now is simply power to relieve a real shortage. And, again, there is room for both public and private power to serve where needed.

President Eisenhower said during his campaign:

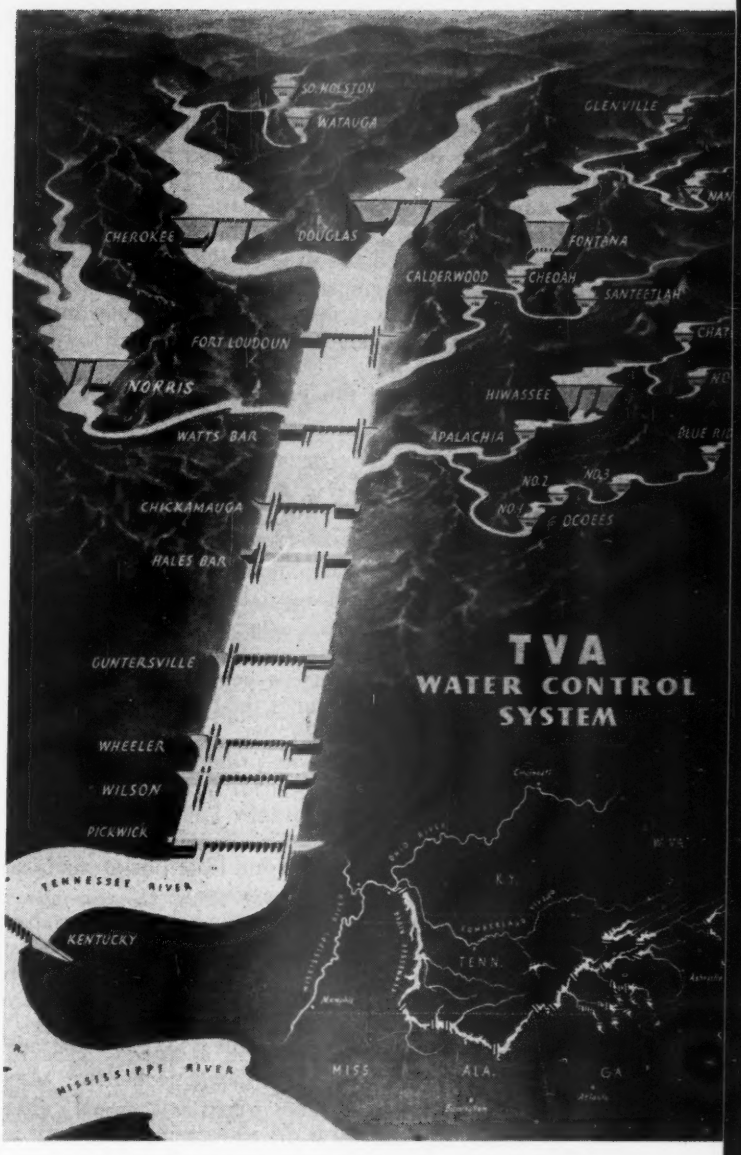
"We still have periodic power shortages. It is high time that there was a correction of this —correction through a partnership of private enterprise, the locality, the State, and where necessary, the Federal Government—but not with the domination of the Federal Government."

The President has also said—and I go along with him 100 per cent—that the development of our power resources must be approached from the grass roots, that the people in the areas should have a voice in what is being done with their own resources and, after all, water is a resource that belongs to all the people, not exclusively to the Federal Government.

THAT is essentially why I have opposed a Columbia Valley Authority in the Pacific Northwest. I have no opposition to an authority if the people want it, but I know from my own surveys the people in that region want no part of a CVA, controlled in Washington, D. C.

Back in 1935—long before many of the present-day advocates of public dams were very much interested in these things—I was a member of a committee of 60 persons named by the Governor of Oregon to a Willamette Valley Project Committee.

It was the purpose of that committee to set up a flood control program through construction of several storage



Above: The TVA, one of the most controversial government projects in history. Construction began only after years of bitter congressional debate, and the furor still continues. Secretary McKay feels there is a place for both private and public development of our resources. Below: Chickamauga Dam, TVA, located at the head of Hales Bar Lake. The Chickamauga powerhouse has an installed generating capacity of 81,000 kw.

dams. The stored water—1,340,000 acre-feet—would be released later in the year to aid in navigation, irrigation, and stream purification. As a sideline, power was to be developed, if and when there was a market. Before the dams were built a power shortage did develop and now two of the dams are nearing completion and will soon furnish 200,000 kilowatts of energy.

That committee really started at the grass roots, operating on a voluntary basis with the Army Engineers. The Engineers designed the project and then it was approved by the Army Engineers Board. Three storage dams were built before the war and are for the protection of the lower river against floods and to hold water for irrigation.

In the early history of this project we had to go to ten

county courts and obtain appropriations each year to pay necessary overheads such as a salary for a part-time secretary and his traveling expenses. Others worked on the committee without an expense account. Later the legislature set up the committee under the title of the Willamette River Basin Commission.

This is my idea of grass roots promotion of the things which the people believe are best for their own communities; and it is much more desirable, I feel, than the promotion of projects thought best by the planners in Washington who would design a program to sell us at the local level without benefit of local experience.

I strongly believe in the local people helping themselves so far as possible, but, if that help lies beyond their means, then comes the time when they should appeal to the Government for assistance on a project that is of itself of a self-liquidating nature but beyond their local capacity.

As President Eisenhower said in a speech in Sacramento, California, last October:

> **"As we go ahead in the development of multiple-purpose dams and all of the other kinds of projects that are needed in industry and in the development of natural resources, the one thing that we insist upon that is different from the opposition is a very vital one.**
> **"We insist that this must be done through partnership, through first of all getting the wisdom, the power and the facilities that are available in the locality and bringing in the Federal Government, not as a boss, not as your dictator, but as a friendly partner ready to help, and to get its long nose out of your business as quickly as that can be accomplished.**
> **"We hold that these great projects are far better planned, developed and operated with the full cooperation and wisdom of the local authorities than they are by putting them exclusively under the direction of some long-haired bureaucrat sitting behind a desk in far away Washington, D. C."**

In the new Administration, however, it is not possible to approach all these problems in the light of what we might have done, had not a Federal pattern been already set. We must start at the point of conditions as they are. If we find unfortunate trends, then it is incumbent upon us to establish new trends that will lead us in what we believe is the right direction.

The Author . . .

Secretary of the Interior Douglas McKay, grandson of Oregon pioneers, was born in Portland and received his early education in that city. He worked his way through Oregon State College from which he graduated with a degree in agriculture.

During World War I, as a first lieutenant with the 361st Infantry of the 91st Division, he was wounded in action. The start of World War II found him vacationing in Pearl Harbor where he formed a home guard unit at the request of local authorities. Later he served as a captain and a major in the Service Command Unit 1911.

His personal business interest, since 1927, has been that of an automobile dealer in Salem, Oregon.

Secretary McKay was Mayor of Salem in 1933-34. With the exception of time spent in the service, he was a member of the Oregon State Senate from 1935 to 1949. He was elected Governor in 1948 and re-elected for a four-year term in 1950.

WE all know that water is our greatest natural resource. We are all dedicated to the proposition that the best and most efficient use of water is our ultimate goal. We should not deviate in any way from achieving this goal. As we look at our rivers, or at least most of them, we see water flowing wastefully into the sea during most of the seasons, and during the flood season destroying millions of dollars worth of property. To conserve and gain the best use of that water, we must harness it and put it to work. The big multiple-purpose dams you will find on the large river systems designed to promote flood control, navigation, municipal water requirements for health and sanitation, irrigation, benefits to fish and wildlife, and hydroelectric power, all confer benefits over a very wide area. There are so many of them that there is no means of charging them directly to the people benefited or of directly taxing for their support. Their magnitude is such that they do not lend themselves to private enterprise. If we are to achieve all of the benefits from them, the program must come in the form of a Federal project. It is beyond the capacity of private enterprise, because private enterprise cannot assume all these indirect and public benefits. They are frequently beyond the capacity of State and local government, because of the large area involved.

It should be our objective in these multiple-purpose reservoir projects to utilize this water resource to the maximum in the generation of hydroelectric power, so far as that can be done, without taking away what we need for consumptive purposes, such as reclamation,

municipal water and other uses in that category.

When that power is generated by the Federal Government, the question arises as to how to dispose of it. Congress through the years has established rules and regulations for us. One of these rules is the preference clause which gives certain marketing agencies a priority classification. The administration of this priority classification, however, poses many difficult problems. For instance, the administration of the preference clause in some instances has been out of order when it has been used to compel changes in the organizations that distribute power at retail in local communities.

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By
Milton F. Lunch,
N.S.P.E.'s Legislative Analyst

In reporting the Armed Forces Reserve Act of 1952, The Senate Armed Services Committee observed that in time of national emergency, "everyone must serve, but not in the same capacity." The Committee then developed the thesis, now so well publicized through various studies and reports of private organizations, that the nation's manpower pool is too small to permit indiscriminate usage. In connection with the problem of recall of reservists, it was observed that in a relatively few years the entire manpower pool of men of military age will be in the reserve of the military services.

"The real problem, however, is how to effect complete mobilization of a Reserve of from 4 to 6 million men. This is not a crash procedure. It takes time, and it is a most delicate process if we are not prematurely to drain off into the Armed Forces critical skills vital to other defense needs. In other words, the selective process, as we now understand it, must still be performed."

The Committee reported that a number of witnesses (mostly from engineering and scientific organizations) had urged that the recall of specialized reservists be governed by a civilian agency, such as the Selective Service System, instead of the military agencies, of which the reservists are a part. "Spokesman for the military services disagreed, and insisted that the recall of the reservists must remain a responsibility of the military, no matter how large the Reserve components might become."

Thus the problem was presented in the Summer of 1952 and thus it remains in the Summer of 1953, with only minor changes in opposing proposals. With the increasing flow of engineers and scientists (particularly recent graduates) into the reserve forces, there is an increasing demand that corrective legislation be adopted so that in the event of "another Korea," or worse, industry will not be denuded of the already-scarce supply of technically skilled personnel. Legislation has been introduced to establish a special civilian board to have jurisdiction over reservists with specialized skills, including the right of final decision on the recall of individuals within the specialized categories, also to be determined by the civilian board. The military is fighting this far-reaching proposal, insisting that reservists are and must remain a part of the military establishment subject to military control. The Pentagon admits that there must be a proper division of specialized personnel between industry and the armed forces but argues that present procedures, subject to administrative improvement, are and can be adequate to insure the retention in civilian production activities of those who are actually necessary to "the national, health, safety, and welfare."

NSPE testified at the 1952 hearings to the effect that the problem should be resolved by legislation establishing basic policies which would recognize certain fundementals pertaining to professional engineers and other specialized personnel in connection with their military obligations. These principles are listed in the following policy statement adopted by the Board of Directors at the recent Annual Meeting. The NSPE Board's statement, however, now goes a bit further and suggests a compromise solution between the two extreme positions previously mentioned. In effect, it is recommended that a joint military-civilian board be established which would operate on a policy level, retaining actual administrative control of the reservists in the military. The mechanism to house and operate such an agency exists in the reconstituted Office of Defense Mobilization, (American Engineer, May, 1953) which now has the major responsibility for government manpower policies.

The full NSPE Board policy statement follows:

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(*Continued from Previous Page*)

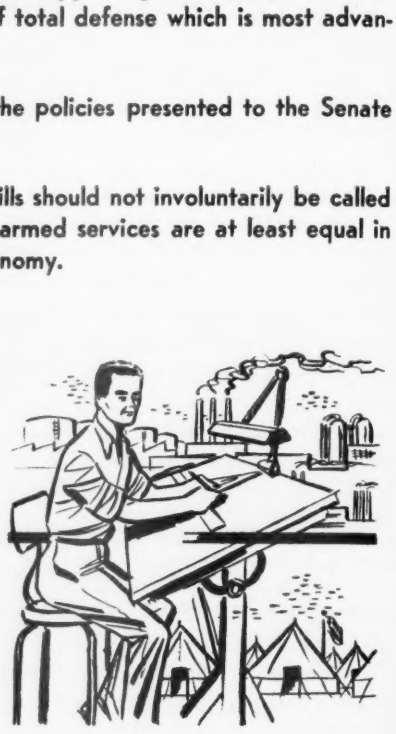
Recognizing that total National Defense requires the most effective utilization of the services of every citizen, whether in the active military service or in the essential civilian activities which are the backbone of the defense establishment, and

Recognizing that those citizens possessing specialized professional, technical, scientific and allied skills are an indispensable element of both the armed forces and the supporting civilian defense facilities of the nation and must, therefore, be utilized in that phase of total defense which is most advantageous to the nation,

The National Society of Professional Engineers reaffirms the policies presented to the Senate Armed Services Committee in May, 1952, as follows:

First, reservists with specialized scientific and engineering skills should not involuntarily be called to active duty unless the skilled services they can perform for the armed services are at least equal in value to those which they can perform for the civilian defense economy.

Second, reservists with specialized scientific and engineering skills serving with the armed services should, insofar as practicable, be used in professional work where their skills can be used to best advantage.



Third, when the armed services have a surplus of men with scientific and engineering skills, as demonstrated by the fact that suitable assignment for the use of these skills cannot be found within the armed services, men thus qualified shall be released to the supporting civilian economy as soon as feasible.

The implementation of the above policy with respect to the recall of reservists to active military duty should be governed on the principle that the needs of the military services and the civilian economy, while in competition at times, are not incompatible; and that the total defense of the nation requires a proper balance and recognition of the needs of both. The armed services and the civilian production organization of the nation are mutually interdependent in all respects, including the assignment and utilization of specialized personnel. Accordingly, it is the position of the National Society of Professional Engineers that there should be civilian participation and cooperation in the formation of basic governmental policy relative to the recall of specialized personnel to active military duty, and that that agency of government having primary responsibility for manpower policies should establish and maintain a joint military-civilian board to consider and recommend specific and detailed policies controlling the recall to active military duty of reservists possessing the professional, technical, scientific, and allied skills determined to be essential to the national defense.

It is further recommended that the specific and detailed policies established by the board should be promulgated by the Commander-in-Chief for the guidance and direction of the military services and that the Assistant Secretary of Defense charged with responsibility for manpower policies be directed to issue, from time to time, such directives as may be necessary to insure compliance with the adopted policies by the operating military services having jurisdiction over the specialized reservist personnel.

AS WE GO TO PRESS, President Eisenhower has announced the re-activation of a study group to consider the feasibility of operating a UMT program simultaneously with selective service. Also, the Office of Defense Mobilization is to submit a report by December 1, 1953, on the availability of manpower for a simultaneous program, "including an analysis of the impact of such a program on our requirements for agricultural, scientific, professional, technical and skilled personnel." The ODM report will be a key factor in establishing government policy on the problem discussed in the above article.

Artistic Roundup

Exhibitions Welcome Engineers' Paintings

In its search for engineers "who are artists, too," the AMERICAN ENGINEER has discovered that many of NSPE's technological experts are also thoroughly adept when it comes to strictly artistic accomplishments. With oils, water colors, crayons, and pen and ink, they have been creating remarkably fine pictures, many of which have evoked considerable praise at various exhibitions.

Peaceful pastoral scenes and landscapes seem to be among the favorites of the engineer painters. A good example is the painting, *Memory Lane*, by Charles Swain Lumley, the executive vice president of H. E. Beyster & Associates, Inc., a Detroit engineering and architectural firm. Mr. Lumley, who was born in England and educated there and in the United States, reports that he took up painting as a hobby to help alleviate the pressure of World War II. Basically a mechanical and electrical engineer specializing in large industrial projects, for the past five years Engineer Lumley has been devoting most of his energies to administrative work, with time out, of course, for painting and photography, an additional hobby that he has also found useful in his engineering practice.

Another electrical and mechanical engineer who excels in painting rural scenes and landscapes is Lee P. Hynes, a Haddonfield, New Jersey, consultant and a member of the Pennsylvania SPE. While he has never had any formal instruction, he is frequently asked to contribute paintings to various exhibitions, and several years ago he had, by request, a one-man showing of twenty-five paintings in the Engineers Club of Philadelphia.

B. H. Calkins of Albuquerque, New Mexico, finds his artistic inspiration in the great natural features of the Southwest. His *Valle Grande Aspens*, which is reproduced with this article, represents one of his favorite scenes on a mountain road at about a 9,200-foot elevation. When he began his study of engineering at the University of Kansas in 1902, the dean of the Fine Arts School was so impressed with his efforts in the required freehand drawing class that he tried—unsuccessfully—to persuade him to switch from a civil engineering major to art. It was not until some forty-four years later, however, that Engineer Calkins actually took any time out from his busy career to develop his artistic talents as an avocation.

Jack H. Murrah, a registered professional engineer in the State of Georgia, is one of the few AMERICAN ENGINEER artists with a record of formal instruction, having studied commercial art at the Chicago Academy of Fine Arts for a year following his graduation in architecture from the University of Miami. Advanced training in electronics at Princeton and M.I.T. during World War II, in which Mr. Murrah served as a Navy radar officer, gave him the additional background necessary to qualify for registration as an engineer. He is a specialist in street and highway illumination as well as in architectural lighting

(*Please turn the page*)

***Memory Lane*, below, a section of a peaceful landscape in rural Michigan, is the work of Charles Swain Lumley, currently a busy executive with the Detroit firm of H. E. Beyster & Associates, Inc. Mr. Lumley, a mechanical and electrical engineer, is also an expert photographer.**

B. H. Calkins, an Albuquerque engineer, found the inspiration for his *Valle Grande Aspens*, below, along a New Mexican mountain road. A college art instructor once tried unsuccessfully to persuade him to give up engineering for an artistic career.

Georgia P.E. Jack H. Murrah, a lighting engineer, poses beside his pastel crayon picture—*Snowy Egrets*. The talented Mr. Murrah once studied to become a commercial artist.

The above painting is Lee P. Hynes' rendering of an old water power grist mill near Kresson, New Jersey. The picture was finished shortly before the old landmark was torn down.

design, and such artistic works as his pastel crayon rendering of *Snowy Egrets*, pictured here, bring him further acclaim.

Louis J. Jay, an engineer with Denver's city building commission and a member of the Colorado Society, is truly an artist with brush and canvas and has won prizes for his paintings in New York exhibitions. An even more unusual artistic talent, however, is his skill in decorating Easter eggs with intricate and beautiful designs as was the custom in the Czechloslovakia of his youth. Mr. Jay's ornate, deftly-decorated egg shells (the contents are always blown out before the shell is painted) are world famous, one even having found its way into the curio collection of Winston Churchill.

As with many other engineer-artists, Richard A. Shankey, an honorary member of the Puerto Rico Society, did a great deal of painting for relaxation during the trying days of World War II when he served in the South Pacific. Interesting small islands, Chinese junks, extinct volcanos, and tropical beaches are among the many subjects that he has called to life on canvas.

Engineers, it is obvious, make first-rate artists. Most of them call their painting a "hobby," but many of the results are so fine that they deserve a place with the works of professionals.—***End.***

(Editor's Note:*—This is the last of a series of three feature articles about engineer-artists prepared especially for the *American Engineer.)

P. E. Conference Board for Industry Reviews Questionnaires for Third Executive Survey

Members of the Professional Engineers Conference Board for Industry are currently reviewing two proposed questionnaires which will be used in the preparation of the third Executive Research Survey Report. The third report, which is being developed as a major project in NSPE's specialized Public Relations Program, will deal with the methods by which users of engineering services attract and hold engineering talent. The publication date has not as yet been definitely set, but it is expected to be some time this fall.

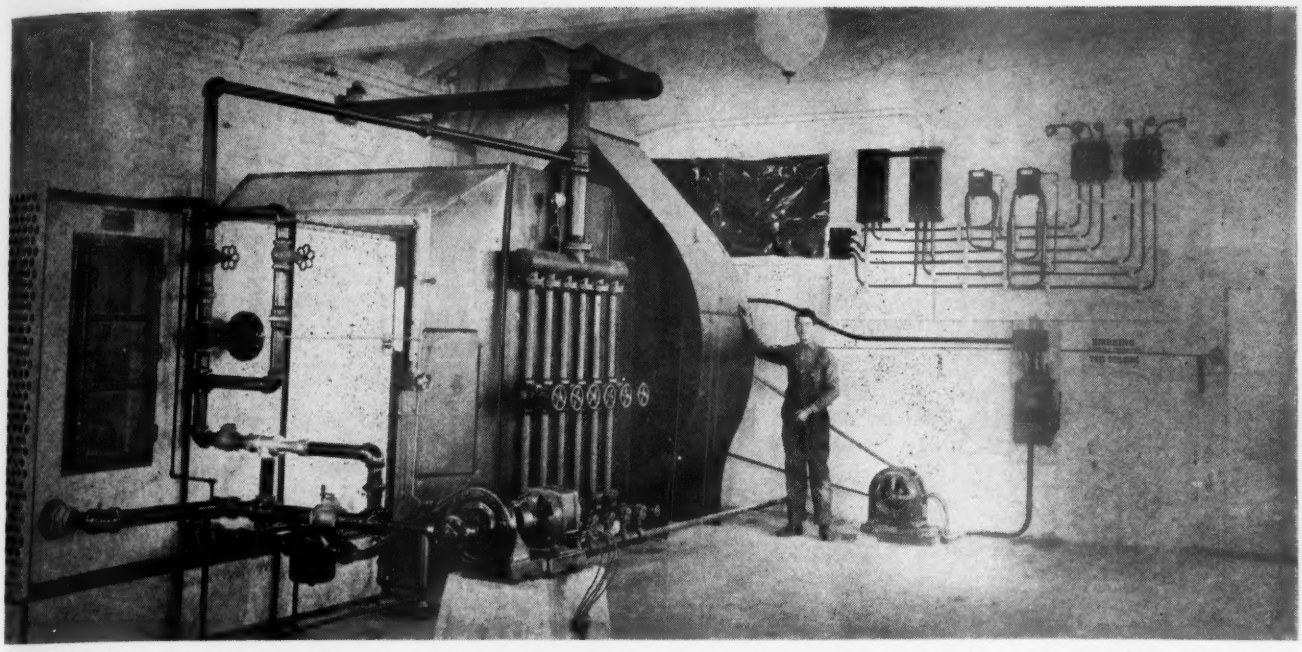
The questionnaires, which the Conference Board is now considering, have been prepared for employers and employees respectively in the engineering field, since it is felt that the report, to be of value, must be predicted on a cross-section of opinion among both groups. When the Conference Board members have completed their review of the preliminary drafts and their suggestions and recommendations have been incorporated in the final versions of the questionnaires, the appropriate forms will be sent respectively to approximately 3,000 engineers employed in industry and government and to from 1,500 to 2,000 employers of engineers.

The questionnaires will include queries relating to such vital subjects as recruitment methods, professional recognition, incentives, benefit programs, promotion methods, turnover, supervision, unionization, and rating systems.

The Professional Engineers Conference Board for Industry, which will supervise the interpretation of the results of the survey in addition to reviewing the preliminary questionnaires, is composed of leading industrial executives and functions in cooperation with NSPE. It was established as an advisory group to guide and provide assistance in connection with current research programs on engineering-management problems.

To date, in conjunction with the National Society, it has sponsored the preparation and publication of two other Executive Research Survey Reports on significant industrial management problems. The first of these reports was entitled *How to Improve Engineering-Management Communications,* while the second was on the subject of *How to Improve the Utilization of Engineering Manpower.* More than 7,500 copies of each of these documents have been distributed or sold to leaders in industry, business, Government, and education. They have been used as the basis of numerous study programs and have been cited as valuable references in other outstanding works on industrial problems, such as the National Manpower Council's recently published book, *A Policy for Scientific and Professional Manpower.*

It is expected that the current survey on the methods of attracting and holding engineering talent will prove equally valuable to those concerned with today's important manpower problems.



This 1907 photo shows the first air conditioning system in a silk mill at Huguet Silk Mills, Wayland, N. Y. Also in the picture is A. C. Stacey, Jr., a Carrier Corporation founder who is still active in the company.

Engineering Masterminds the Air Conditioning Industry

TWENTIETH CENTURY MAGIC

BACK in 1692 on Gallows Hill in Salem, Massachusetts, Martha Allen Carrier, a strong-minded woman who stood up to the Andover town fathers once too often, was hanged for witchcraft. Cotton Mather and the others who condemned her were convinced that they were thus throttling the power of Satan. But what would they have thought if they could have had a brief glimpse into the future? How astonished they would have been, how their seventeenth century "evidence" of witchcraft would have paled if they could have seen that one of Martha Carrier's descendants would actually be able to create weather to his own taste!

Little more than two centuries later, in 1902, Willis Haviland Carrier, a young engineer only one year out of Cornell, designed a temperature, humidity, air circulation, and ventilation control system for the Brooklyn plant of the Sackett-Wilhelms Lithographing and Printing Company, and thus also started the now booming air conditioning industry.

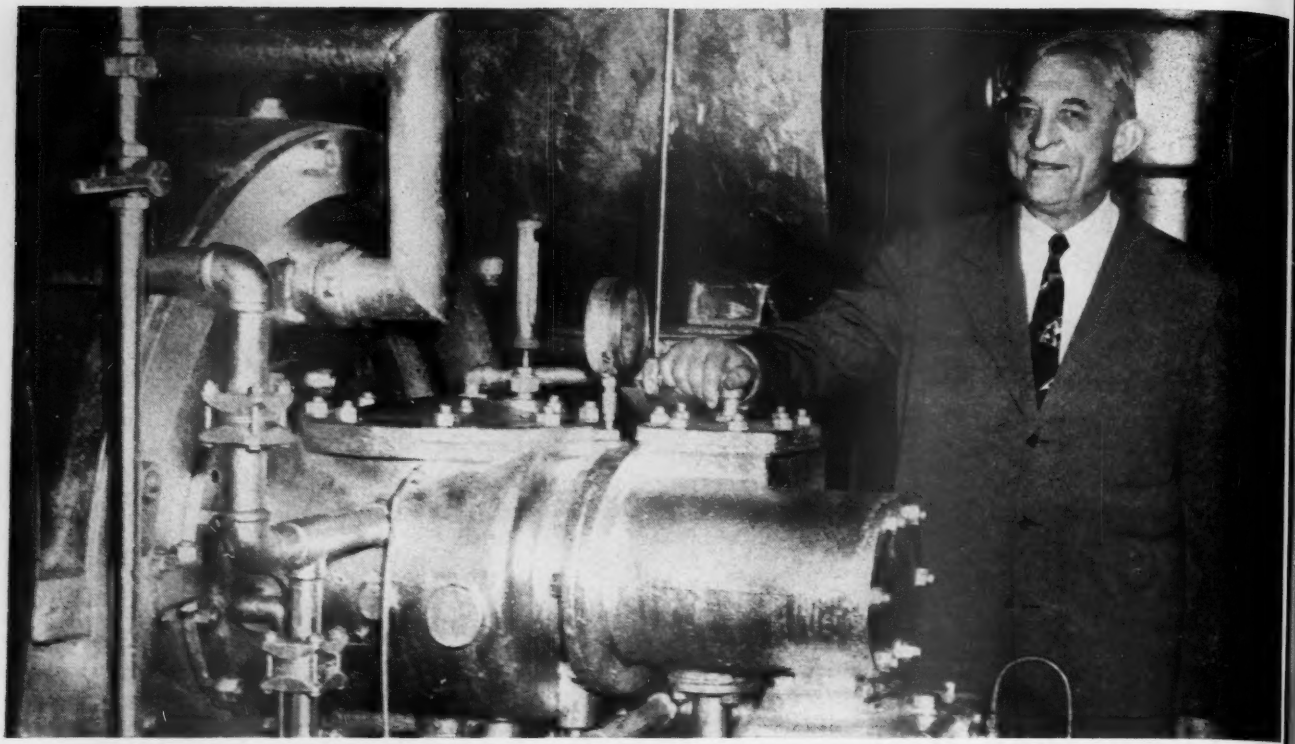
For innumerable years men had been trying one means and another to eliminate the personal discomfort, and industrial complications, caused by hot weather; and they had learned how to cool, circulate, and moisten air. But until Carrier, then a research engineer with the Buffalo Forge Company, Buffalo, N. Y., introduced his novel system for the lithographing plant, no one had succeeded in actually reducing the humidity in indoor air and holding the moisture content to a specified level. Moreover, the Sackett-Wilhelms system not only reduced the indoor temperature during the summer, but also controlled the winter temperature while keeping a constant year-round humidity of 55 per cent.

Thus Willis Carrier had started to earn the title of "the father of air conditioning." Not content to rest on his laurels after his first success, he embarked on a series of experiments and inventions which led to his patenting, in 1904, of the first equipment which used water to dehumidify air as well as to humidify it. This made "dew point control," which is now the basis of most large air conditioning installations, industrially feasible on a wide scale. Then, seven years later, he announced his "rational psychrometric formulae," a prime scientific finding on which all modern scientific air conditioning is based.

Meanwhile, in 1907, Carrier and a fellow engineer, J. Irvine Lyle, organized the Carrier Air Conditioning Company as a subsidiary of the Buffalo Forge Company by which they both were employed. Carrier air conditioning advances continued under these auspices for seven more years as the talented engineer and his co-workers pioneered industrial air conditioning systems that facilitated the improved production of celluloid film, tobacco, pharmaceuticals, processed foods, and many other items.

With the advent of World War I, however, the Buffalo Forge Company, taking stock of the over-all economic situation, decided it would be inadvisable to continue the engineering and installing of air conditioning systms, even indirectly through its subsidiary. The news was a blow to Carrier and Lyle who, while they were invited to continue in research and sales with the parent company, did not wish to leave the future development of the infant industry which they had put on its feet to anyone else. With five other engineers—Edmund P. Heckel, Alfred E. Stacey, Jr., Edward T. Murphy, L. Logan Lewis, and Ernest T. Lyle—a great deal of courage, and an initial capital of their own pooled savings, plus borrowed money, amount ing to $32,600, in 1915, therefore, they set up the Carrier Engineering Corporation—now the Carrier Corporation —and ambitiously opened offices in Buffalo, New York, Chicago, Philadelphia, and Boston.

WILLIS Carrier's continued experiments widened the horizons of industrial air conditioning so that soon metalware, firebrick, terra cotta, plaster molds, tiles, leather and hides, candy, even macroni, and World War I mu-



Above is a picture of Dr. Willis H. Carrier standing beside the first centrifugal refrigeration machine ever produced, installed at the Onondaga Pottery Company in Syracuse, N. Y. Dr. Carrier invented the centrifugal unit in 1921.

nitions of many types were being dried and cooled by his installations.

The introduction of his centrifugal refrigeration machines in 1923 opened up the "comfort" air conditioning field, even though their first buyer was a Philadelphia candy manufacturer, Stephen F. Whitman and Sons, ordering them specifically for industrial purposes.

In 1924 the J. L. Hudson Company, a Detroit department store, became the first to use comfort air conditioning as such and to advertise it as a major retail sales-getting tool. The successful installation of Carrier centrifugal units in three Texas theaters in the same year led the New York's Rivoli to introduce the method for summer comfort in 1925; and, only six years after the Texas experiments, some 300 theaters throughout the country were being cooled by Carrier. In 1925 Madison Square Garden officials also contracted for three centrifugal refrigerating machines to cool the air in summer and freeze the ice skating rink in other seasons. U. S. Navy ships and a Brazilian gold mine also tried out Carrier air conditioning during this early period. And the chambers of the U. S. Senate and House in Washington, D. C., were added to the list of users in 1928 and 1929.

It was during the 1920's also that smaller air conditioning units were first introduced although their widespread acceptance waited another decade. A residential "Weathermaker" was brought out in 1928. It was designed to perform the cold weather functions of heating, humidifying, air circulation, and cleaning; and summer cooling could be added to it. A subsidiary firm, the Carrier-Lyle Corporation, was then formed to bring this new development to the home market, but the depression of the thirties and subsequently World War II delayed the extensive development of this market until recently.

Now it is becoming the greatest air conditioning field of all, with the demand for room air conditioners rising to a new peak each year. Retail sales of these units were about 420,000 in 1952, more than twice the 1951 total of approximately 200,000. It is expected that more than 600,000 room air conditioners will be sold by the end of 1953. The number of homes equipped with one or more room air conditioners should pass the million mark this year, according to Carrier Corporation estimates, and is expected to increase to nearly four million by 1957.

The construction of the completely air conditioned home is also a revolutionary factor in today's building industry as more and more architects and contractors are incorporating this package feature in their new residences.

The Carrier Corporation, the pioneer firm in the air conditioning field, is now situated in Syracuse, New York, the consolidation of its activities at this location having been accomplished largely under the direction of Cloud Wampler, a former Chicago investment banker and counselor, who became a director and executive committee member in 1935 and who is now president

Willis H. Carrier, the engineering genius who started the new industry on its way back in 1902, died in New York on October 7, 1950, shortly before his seventy-fourth birthday. During World War II, he had accomplished what he considered the greatest engineering achievement of his career—the successful design, for the National Advisory Committee for Aeronautics, of an air conditioning and refrigerating system installed in the N.A.C.A. wind tunnel at Cleveland, Ohio, to simulate freezing high-altitude conditions for the testing of prototype planes. For its over-all wartime contribution the firm was awarded the Army-Navy "E" six times.

There are many other interesting stories that might be told concerning the individual triumphs of Willis Carrier and the industry he established—accounts of his invention, for instance, of the Conduit Weathermaster System which made possible the efficient air conditioning of sky scrapers, regardless of age, or of his perfection of an air cooling system for railway cars.

Always, however, there is the outstanding fact that good engineering is the key to effective air conditioning, as it is the key to so many other technical developments that make twentieth century living more pleasant and healthful. ***—End.***

ARMY ACTS ON ENGINEER UTILIZATION

The Department of the Army, the largest single employer of engineers, has not been immune from today's lack of technical talent. Here's how the problem was met.

By Edward J. Sloane,
Office of Civilian Personnel, Department of the Army

THE nation is faced with a great demand for engineers. Korea proved it. An Army drive after June 1950, to secure civilian engineers fell far short of its goal. And this was not an isolated case for the Defense Manpower Administration later substantiated the findings with alarming figures on the present unbalance of supply and demand for these highly skilled members of the industrial society.

Engineering associations and government statisticians have come up with a wide range of estimates on how acute this demand is. However, they unanimously agree that more trained engineers are required than are presently in existence.

Since 1900 the number of engineers required per 1,000 industrial workers has quadrupled. Due to the highly scientific construction of many of our present products, industry now needs 16 engineers for every 1,000 workers, while in 1900 only four were required.

At the same time the industrial demand for engineers was sky-rocketing, certain social forces were beginning to decrease the student supply and make the situation even worse. In the first place, the low birth rate of the 1930's has resulted in fewer engineering college freshmen around this time—the normal college entrance time for men born in the early thirties. Secondly, the end of the G.I. Bill has sharply reduced the number of potential engineers.

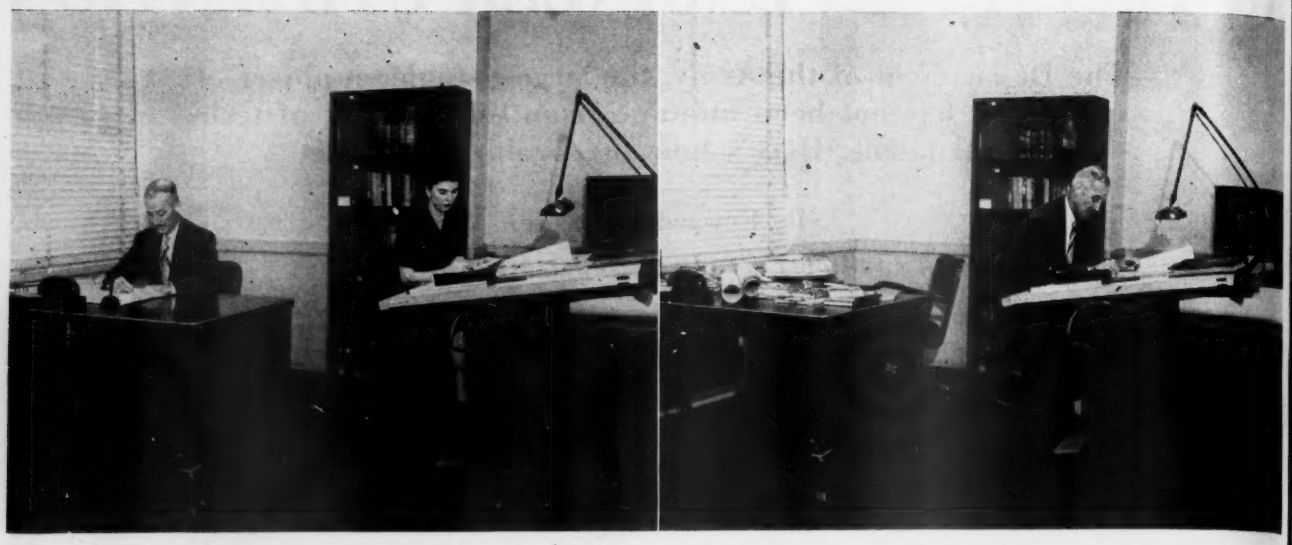
Another reason for fewer engineers, though less direct, is the fact that in WW II there was some decline in the quality of instruction in mathematics and the sciences in the high schools because of the draft of male teachers. This resulted in less interest evidenced in engineering as a profession.

According to the Bureau of Labor Statistics the constant requirement for college graduates with engineering degrees is about 30,000 per year. Dr. M. H. Trytten of the National Research Council estimates that the 1953

The Army: No. 1 User of Engineering Talent

The Army requires hard-to-get, civil, construction, and cartographic engineers, and engineering aides, to perform its civil mission, such as military construction and public works. Too, the work is difficult and far away places are not always appealing. Above: Runway packing operations at Eielson Air Force Base, Alaska.

This . . . ***Not This . . .***



The Secretary of the Army directed that each installation commander survey the duties of each of his engineers and cut out any work that could be performed by other than trained engineers. Here, an engineer was freed for professional tasks by the assignment of a technician already in the organization who performed routine technical assignments (detail drawings, office production scheduling, layout). By increased utilization of such professional engineers, the Army was able to reduce its over-all recruiting needs for professionals.

graduations will number 20,000, and will decline to as low as 15,000 in 1954.

The Korean conflict necessitated a "partial mobilization" of engineer manpower for war production. Engineers began to enjoy the position of being a "scarce commodity." The Government wanted them. Industry wanted them. The cream of the graduating engineer crop was lured away from further study and research with inflated salaries.

All of this tended to put the Army in the position of low man on the totem pole since its Development Arsenals could not offer the same salaries as private industry. Something had to be done—our soldiers were fighting and dying in Korea. Production of new weapons was a "must," and this called for skilled engineers.

SOMETHING was done. The Secretary of the Army directed that each installation commander survey the duties of each of his engineers and cut out any "paper work" jobs that could be performed by other than trained engineers. In addition, all vacant positions for which engineers were being sought were reviewed and wherever possible these positions were eliminated. Some jobs that could not be abolished were filled by non-engineers.

This survey paid off. The need for additional engineers was reduced by 686 positions. The Army was able to make this reduction without detracting materially from the efficient operation of any one installation's mission. The skill level of 645 engineer positions which were vacant was reduced. This enabled the Army to fill these positions with less skilled engineers of whom there was a larger supply. During the three months following July 15, the date of the Secretary's directive, 1250 persons were promoted or transferred to more critical positions in the engineering field. Of course, this decreased the Army's needs for personnel in engineer supervisory jobs.

Each post, camp, or station was combed for employees who had education or experience as draftsmen or engineering aides, but who were not presently performing this type of job. This accounted for 210 more positions being filled.

The Secretary had also requested that each installation commander submit the names, locations and qualifications of engineers with greater talent, experience, or potential than was needed at their particular installation. And 300 names were submitted. The Secretary's Office, in turn, circularized the names of these men on a Department-wide scale. In a continuing project, men on this list are transferred to positions which make full use of their capabilities.

This reallocation of jobs and shifting of personnel by the Army has added up to quite a substantial savings in experienced engineers. The Army can now carry out its mission with fewer engineer requirements, and consequently more engineers are available for industries engaged in production for national defense.—***End.***

The Author . . .

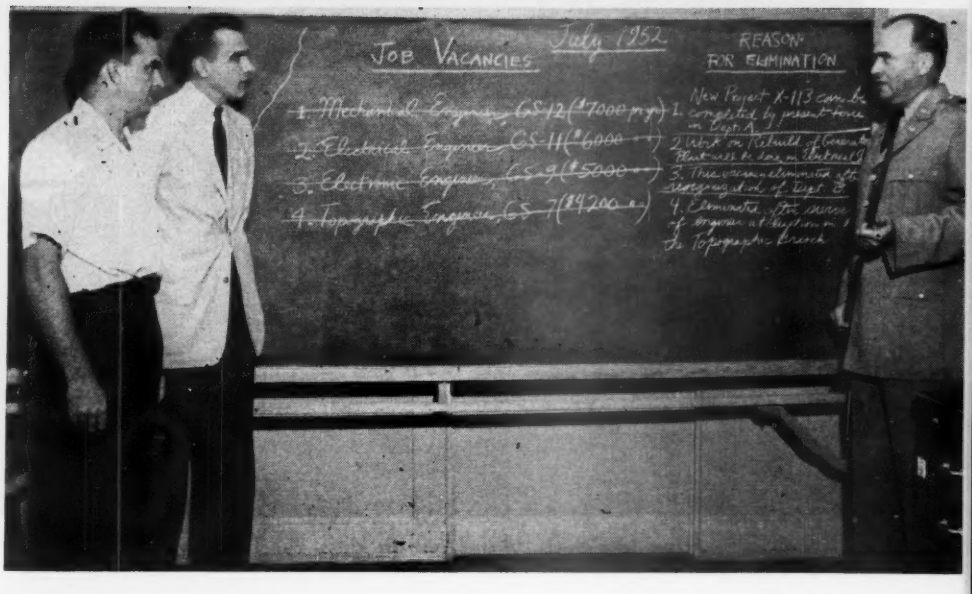
Mr. Sloane

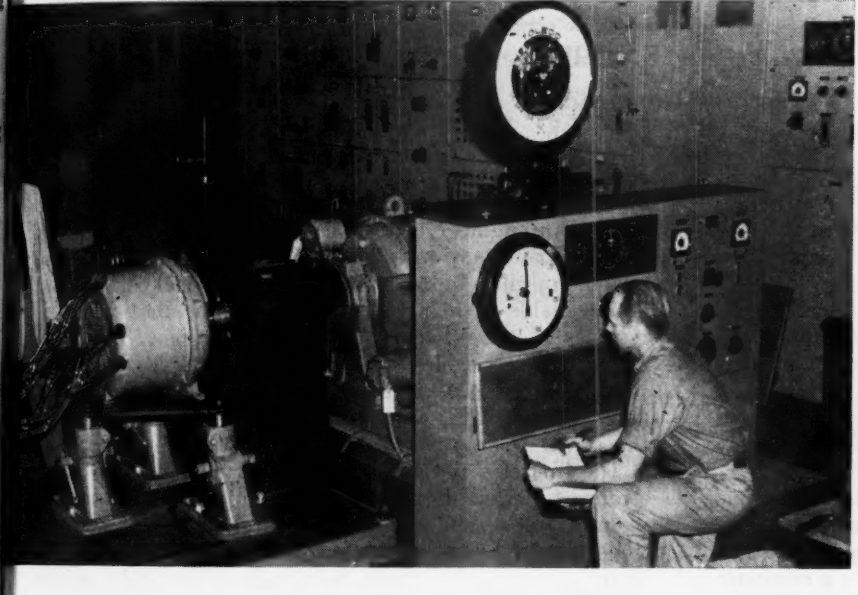
Mr. Sloane is presently located in the Secretary of the Army's Civilian Employee Utilization Division, which furnishes staff guidance to Commanding Officers of Army installations on recruitment, placement, and better use of civilian employees.

He was attached to the Army General Staff in a civilian capacity shortly after the start of the Korean War. His job was to project estimates of the critical civilian skills needed by the Army Department in event of total war. Chief among such critical skills were those of the engineering profession. In view of the nation-wide shortage of engineers, the Employee Utilization Division launched the civilian engineer survey, results of which are described in this article.

He is a graduate of Columbia University School of Public Law and Government. He is married, has two children, and lives in Washington, D. C.

All installation commanders, together with their civilian personnel office staff and operating division heads, were requested by the Secretary of the Army to review all vacant positions for which professional engineers were being sought, and to eliminate vacant positions wherever possible. This "hard look," during a three months' period in late 1951, resulted in a total reduction of needs for additional engineers by 686 positions, at installations throughout the nation. Here, an installation commander is shown eliminating four existing vacancies requiring professional engineers, after a meeting with his staff and the operating people concerned.





The skill level of 645 engineer positions was reduced, or re-engineered, so that they could be filled by lower grade engineers or by non-engineers. Here, an electrical engineer has been relieved of spcialized tasks customarily assigned to him at a generator testing laboratory, and his place at the instrument panel taken by a skilled technician.

The Secretary of the Army requested that each installation commander submit the names, locations, and qualifications of engineers on the payroll who had greater talent, experience, or potential than was needed at their particular installation. The Office of Civilian Personnel, in turn circularized the names to field installations. In a continuing project, men on this list are transferred to positions which make full use of their professional skills.

Good engineering jobs such as this one in U. S. Steel laboratories are available to those who can sell their capabilities.

MR. ENGINEER—SELL YOURSELF!

By Arthur R. Pell,
Personnel Consultant

"WHY," asked an engineer client of mine, "with all the ads for engineers in the papers, is it so tough for me to get the right job? There's plenty of competition around for the best positions, and I can't seem to get to first base in an interview."

"Let's analyze the approach you've been taking," I said, "Many men with highly rated technical qualifications fail to get the best jobs because they don't know how to market themselves."

Finding a job is a marketing operation. We should study the methods used in selling commodities and apply some of them to our job search.

The first step is to prepare a good resume. The resume is your "ad." It is the come-on piece designed to make the potential employer interested enough in you to call you for an interview. It will also serve later as a reminder to him of who you are.

If your "ad" doesn't draw, then you'll never be able to show the company how good you are. It is the same as having an excellent product nobody will buy because it is poorly marketed.

The most common type resume is the chronological type. Most persons have at some time or other written a resume of this sort. My engineer client had done this. He started by describing his schooling and then listed all his positions covering every month of his life from graduation to the present time. He worked long and hard at it. It covered seven pages of single-spaced typing.

Did you ever take the trouble to read a seven page ad? Very few personnel managers or chief engineers will do it either. A resume must be brief to be read, and must be written in a readable form.

One can write a short and concise chronological resume, but it is often more effective to write a good functional type resume, which emphasizes the highlights of your career. It stresses not where you worked, but what you have done.

The functional resume is a comparatively recent development in personnel technique. It requires a bit of writing skill to do it properly. The average man, be he business executive, technician or engineer is an expert in his own field, but is not trained to present his abilities in words. An engineer, who is certainly not expected to be able to write copy to sell anything, especially lacks this type of training. In the larger cities, personnel consultants are available to help applicants write the best possible resumes of their background and experience. For best results it is advisable to utilize services of a specialist.

If the services of a personnel consultant are not available, and you have some gift for writing, try composing a functional resume yourself.

The first step is to analyze yourself to determine your strongest points. Remember that the personnel man is primarily interested in what you can do and the qualifications you have which will contribute to the success of his firm.

Jot down the exact nature of your work in previous jobs and enumerate the functions you performed. Note suggestions you made which improved the efficiency of any operation. After you have done this for each job, pick out the major functions which indicate the basic nature of the work. Briefly describe these functions. Remember that you may and should combine the functions which are inherent to several jobs. If you were an office engineer in three different jobs, you need only list the function "office engineer" once and describe under it the pertinent highlights of all three jobs.

Each paragraph of your resume should cover one major function. It should describe your special assets and achievements in that function. Mention the size of the job if it is significant. Mention special equipment used and special problems faced and how you solved them.

List in a separate paragraph your education, degrees, special technical courses, licenses, memberships in professional organizations and any articles or books you have had published.

Then, list your jobs and the dates you held them. You need not describe them as the functions have already been noted. Try to keep your entire resume as brief and concise

(*Continued on page* 39)

An *American Engineer* SPECIAL REPORT

Re: *Employment Outlook for Technicians (Labor Department Bulletin No. 1131)*

● Of considerable interest to anyone concerned with the most effective utilization of engineering and technical manpower is a recently-released Labor Department bulletin (No. 1131) on the Employment Outlook for Technicians. It is one of a series of reports made available through the Bureau of Labor Statistics' Occupational Outlook Service for use in vocational counseling.

In addition to its avowed aim of inducing more young people, and veterans, to consider careers as technicians, it also gives an excellent summary of just how these technically-trained persons—draftsmen, engineering aids, laboratory technicians, and electronic technicians—may be employed to support the work of graduate engineers and other professional scientific personnel. The report concentrates on the present demand and future prospects for those who will work as part of research or production teams with engineers, physicists, and chemists, pointing out that the latter professionals "can improve their efficiency and increase their total output by having technicians perform some of the more routine tasks." Thus, the report continues, "technicians have an important part in strengthening America's technical and military position."

Quoting a previously unpublished definition by Dr. Lynn A. Emerson of Cornell University, which applies particularly to the workers closely associated with professional engineers, the report states: "The technician is a person who works at a job which requires applied technical knowledge and applied technical skill. His work, in this respect, is somewhat akin to that of the engineer, but usually the scope is narrower. His job also requires some manipulative skills—those necessary to handle properly the tools and instruments needed to perform the technical tasks.

"In his special field, he has considerable technical knowledge of industrial processes, and in this field he knows how to apply the necessary principles of the physical sciences and of mathematics. In general, he uses instruments, in contrast with tools. His contribution is mainly through mental effort, in contrast with muscular exertion. . . ."

The report goes on to give a more detailed picture of specific jobs that technical aids may be expected to perform in various fields. It gives a brief summary of the types of industries in which technicians are employed and also reviews the status of their employment by the Federal Government.

The training necessary to a technician's career is discussed, and the report covers the various ways in which this training is achieved. It is pointed out that some engineering school "drop-outs" eventually qualify for technician ratings. In addition, special attention is given to the curricula offered by technical institutes and junior colleges in which technical instruction is available. Attention is also called to the fact that some large corporations conduct training programs for technicians, and that the field can also be entered in some cases through the apprenticeship route.

Those planning to attend a specialized school with a view toward becoming technicians are advised to select their school carefully, particularly if they plan to apply the credits they obtain toward the achievement of an engineering or other scientific degree at some time in the future.

The short-term outlook for the employment of well-trained technicians is excellent, the report asserts. Increased research and development activity since the start of the Korean hostilities, it states, "has led to an acute shortage of engineers and scientists and, therefore, to an increased demand for technicians who can handle the more routine tasks, thus enabling the professional personnel to concentrate on more advanced aspects of the work. Because a continued shortage of engineers and scientists is expected during the next several years, the demand for technicians will probably remain high, and the prospect is that not enough well-trained people will be available to meet this need."

The general advance of science and its practical application in industry should further expand the employment of technicians over the long run, with the electronics and aircraft industries among the most promising fields. A warning is sounded, however, that in the long run the number of job openings for technicians will also reflect the general economic situation and that, in any period of considerable unemployment, employers tend to become more selective and to hire the more highly-trained professional persons if an employment slow-down makes them more readily available. The technician, the report notes, would, therefore, "be well advised to consider taking additional courses of a general nature, as well as specialized courses in his field, to better prepare himself to meet competition."

The report concludes with a review of earning prospects for technicians, presenting a number of statistical tables in this connection.

- - NEW PROCESSES - -

Pulse-Jet Principle Used by "Swingfire"

Successful application of the pulse-jet principle, which powered the German V-1 buzz bomb, has just been announced by Devenco Incorporated, of which Theodore J. Kauffeld, M.E., P.E., is Board Chairman.

The German buzz bomb was propelled by an impulse duct engine mounted on the glider-like weapon's tail. This engine generated furious heat from combustion of a fuel-air mixture. Expansion of this heat in escaping from the exhaust provided thrust.

Devenco terms this new principle the "Swingfire" system. In essence, "Swingfire" traps this combustion-produced heat with an efficiency of 92 per cent, and applies it to a variety of purposes and products.

The first, known as "Swingheater," has a dual function. Aimed at licking the cold start, destroyer of up to 40 per cent of an internal combustion engine's life, "Swingheater" supplies intense pre-starting heat to a motor's vitals. Also, when equipped with a heat exchanger, it warms bus and truck interiors, or tents, cabins and similar structures.

The second product, "Swingfog," atomizes a standard pesticide or fumigant into a dense, clinging fog fatal to insect or bacterial life. As a frost-fighter, it generates a fog blanket that prevents heat, radiated from the earth's surface, from escaping into space.

"Swingburner," the third in the group, may be likened to a giant blow torch, with a maximum heat output equal to that required for a spacious six-room house. Designed to fit quickly into any conventional fire box, it has many applications in indoor and outdoor situations, including construction operations in sub-freezing temperatures.

The pulse-jet principle relies on the physical nature of the pressure or sound wave. Created by a sudden impact, similar to the ripples that result from dropping a stone into a pond, the wave has a trough of pressure decrease and a crest of increase.

In the "Swingfire" system, the sudden wave-generating impact is created by the first explosions resulting from glow-plug ignition of a fuel-air mixture in a combustion chamber.

For more details write: Devenco, Inc., 150 Broadway, New York 38, N. Y.

Photocopies in Any Color

Now a revolutionary new process that will make photocopies in any color has just been announced by the American Photocopy Equipment Co., manufacturers of the Apeco Systematic Auto-Stat office photocopy machine. This color copying process makes possible color-code copies for fast visual separation in office system work.

Mr. H. G. Miller, business methods expert for the company, has just completed a pilot survey among Apeco Systematic Auto-Stat users and has found many applications for color photocopies to increase the efficiency of paper handling.

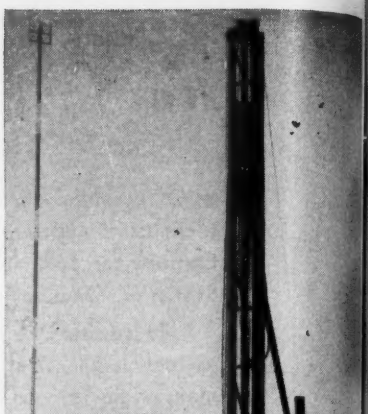
Mr. Miller brought out that all firms doing both government and civilian business are practically forced to separate the handling of the two types of business and that colored photocopies can instantly code government from non-government material. A user can now color code orders to direct them to the proper department to be filled or to designate priority in shipping.

The unit is designed to handle letter and legal size copies as well as larger copies up to 11 inches wide, in any length. There is no limitation as to type of paper, documents or originals that can be copied . . . regardless of whether the original is printed on one or both sides or on opaque or translucent paper. Copies can be made in any color no matter what the color of the original.

To make colored photocopies with the Apeco unit no additional equipment is used. The procedure is the same as for regular black and white copies. According to the manufacturer, copies are made in less than a minute in just two simple steps. The equipment is simple to operate, requires no special set-up — is just plugged in and it's ready for automatic operation.

A free illustrated booklet describing the Apeco Systematic Auto-Stat in full detail is being offered by the manufacturer — The American Photocopy Equipment Company, 2849 No. Clark St., Chicago 14, Illinois.

American Engineer advertisers offer valuable free information and literature. It's Good Business to write them often!



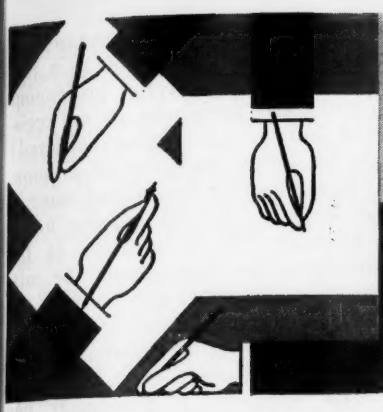
Sand Compaction For Foundation

Pile driving equipment was used to accomplish a rather unusual purpose on a new compressor building just completed by Western Foundation Corporation, New York and Chicago, at Blythe Compressor Station, California.

The site is underlain by loose fine sands. To prevent compaction of these sands from vibration of the compressors, these sands were compacted before erecting the compressor plant, using sand piles; the vibration and displacement from driving the piles densifying the sand. The piles are 16 in. diam. and from 20 ft. to 40 ft. in length. A total of 954 piles on a 4 ft. by 5 ft. spacing were driven in the 80 ft. by 208 ft. site.

Using a No. 0 hammer, a steel casing of 16 in. diam. with a concrete bottom plug was driven into the earth. A core having a closure plate at the lower end fit snugly into the casing. Casing and core were driven to required depth and resistance, the core removed and the casing filled with sand. Core was then placed back on top of sand and casing extracted by a system of lines pulling over top of core. Lines were reeved in by Western's patented system which forces the core down at a rate which compensates for the upward movement of the casing.

Plans for this method of compaction were developed by Stone & Webster Engineering Corporation. Standard pile driving equipment of Western Foundation Corporation was used. Necessary modifications in pile driving procedures to insure the sand was properly placed were developed by Western.



Professional POSTSCRIPTS

Welcome! First off this month we turn to the wisdom of *youth*. Yes, we can learn from the young by freshening our own ideas and gaining new approaches. If you don't believe it, read the following piece by Mr. B. C. Peralta, a 1953 graduate of Oklahoma A & M, and the first place winner of the annual Oklahoma SPE's Essay Contest. New Engineer Peralta's title is, "Why I Want to be a Professional Engineer."

HENRY GORDON STOTT gave a technically satisfactory definition of engineering when he wrote, "Engineering—the art of organizing and directing men and controlling the forces and materials of nature for the benefit of the human race."

The use of the terms "art," "organizing," "directing," and "controlling" is significant when the purpose of engineering, namely, "the benefit of the human race," is brought into mind. On the basis of the above definition, it can be shown that one who practices engineering has an important mission to perform. This mission depends on the phase of industry in which he has specialized. It is important for the engineer to realize that his fellow citizens, as well as his company, depend on him to get the job done as economically and substantially as possible.

More specifically, the civil engineers who build today's massive office buildings, four-lane bridges and superhighways are responsible for the safety of a sizable portion of humanity that works within or passes through those edifices. Similarly, the electrical engineers in a community must provide reliable power and communications facilities of the same order of permanence as the steel and masonry of civil works. In the factories, goods must be continually produced in volume and quality required by the population. To keep the wheels of industry turning so as to satisfy the needs of the world, qualified engineers must be on duty.

The engineering student, as well as the practicing engineer, should, therefore, realize early enough that the keyword of the busy workaday world is "competence." Webster shows correlation of this term with his interpretation of "art."

According to Webster, "art" is "skill in performance acquired by experience, study, or observation." Fortunately, the newly graduated engineer or the practicing engineer can formally show that he is competent to practice the engineering art by attaining the staus of a registered professional engineer.

In every state of the Union, there are two routes to follow in order to acquire professional status. In almost all, if not all cases, the dictionary definition of "art" is followed by state law, *viz:* ". . . skill in performance attained by *experience, study,* or observation." Thus, the two routes or categories prior to valid registration as a professional engineer are: "engineer-in-training," and secondly, a seven or eight year period of successful engineering experience.

In the "engineering-in-training" status, the graduate, fresh from his studies from an accredited college, is given a rigorous written examination. In the latter category, regular engineering school graduates, as well as self-made technical men, can earn professional status by showing proof of worthwhile practice for the required length of time. Formal written examinations may be given them, depending on state board policy.

The writer recalls from a course in Business Law the worthy reasons behind the legal standards that a state board expects from technical personnel who wish to practice within the state. These reasons, of course, reflect on the nature and magnitude of the engineering service or utility involved, as mentioned previously. These reasons have to do with public safety and convenience by allowing only the competent engineers to work in or be in charge of extensive projects. These objectives were promoted by the American Society of Civil Engineers as early as 1899, and particularly in 1911 when a model registration law was submitted to several state legislatures by the Society.

In addition to the above reasons, it is my belief that the engineering profession and the members themselves would benefit from registration as professional engineers. Since the motive for this type of license is to certify that the individual engineer can conform to the legal standards of his occupation, a registered engineer would have considerably more prestige and can inspire more confidence than one who is not. In fact, in other reputable professions,—in particular, medicine and law—unlicensed parties are not allowed to practice at all. As a result, physicians and members of the bar enjoy a high degree of respect in their communities since assuredly there are no quacks or charlatans in their ranks. They are consequently able to engage in their business with professional dignity, and their clients reward them accordingly.

As implied earlier, whether the engineer arrives at professional status *via* the road of experience or through the engineer-in-training examinations, it is obvious that both routes point to high standards of theory and practice. As such, both journeys are necessarily rigorous. This situation has been known to prod colleges to maintain strong faculties and modern plants in order to turn out graduates capable of hurdling the state examinations. This reason, by itself, would be a solid argument for professional registration.

The serious student should, therefore, prepare for the engineer-in-training examinations by analyzing and absorbing as much as possible all the knowledge gained in his different courses. It is entirely possible that his academic standing will improve if he views registration as a professional engineer as a goal. In this regard, assuming that a student has had occasion to turn out mediocre grades, due perhaps to part-time employment, he must all the more resolve to prepare for the state examinations for this reason: if he passes the exams, it will be a master stroke of "face saving" as no one can deny that it takes ability and matureness for one to muster all his energy and talents to review a four year college course in its entirety. The intensive review sessions, incidentally, will enable the student to take an inventory of the amount of technology that he has accumulated, to integrate the various specialized courses, and thus finally to appreciate the many branches of learning that make up the engineering art.

Similarly, the practicing engineer

who is wide awake to the benefits of professional status will tend to be more observant, imaginative, and efficient in his present job, inasmuch as an accounting of his merits will have to be made by the state board. The writer knows many ambitious engineers who lack academic training but are seriously attempting self-improvement by correspondence schooling or by participating in their company's training courses with a view to registering as professional engineers in the near future.

I, therefore, believe that professional standing is a worthwhile objective as it brings about healthy attitudes among students, educators, and practicing engineers.

To recapitulate:

I shall participate in the engineer-in-training examinations since the over-all scope of my review will give me the opportunity to see my entire college training in the right perspective.

I hope to enhance my position in society by striving to meet ethical standards by attaining professional status.

I realize that the modern engineer deals with extensive operations, so that legally certified competent men must be available for the safety of the public.

I am conscious of the efforts of the tration, and I shall undertake to con-engineering societies to promote regis-vince others to move in that direction.

—PP—

Engineer Stephen Arthur Derry of the Kentucky SPE (not, as yet, affiliates of NSPE), has set down his views on a number of problems facing the profession today. Do you agree with all Mr. Derry says? Why not write —PP— and let your fellow professional engineers know what you are thinking on these and other issues?

—PP—

. . . Of course their (the labor unions) attacks on the medical and legal professions are dreams of the future. But, their thinking about engineers are out of the dreaming stage. Attempts by labor unions have been made in Ohio and the West Coast with some minor success in bringing designers, draftsmen, etc., under union regulations.

Unions thus far have failed to captivate engineers. Money hungry union organizers will strive to organize engineers, as they have succeeded in organizing trade workers. Trade workers have lost their rights as individuals and no longer can voice their views with effect.

Today the world over the medical and legal professions each separately stand on their own as united professions. That is profession-wise. Each speak the voice and the one voice for their respective professions. This does not mean that doctors do not disagree within their own council, nor attorneys and judges do not disagree within their bar associations, but when each makes a decision as to what is or is not in the public interest or to the interest of their respective professions, each separately presents a united front—profession-wise. This single voice, profession-wise is incidental to a genuine and invaluable public service which is all the more effective. Because of the fundamental unselfish objectives each protects the members of their respective profession, individually, and collectively from any attack on their professional prerogatives whether by government, industrial or financial groups or by individuals.

In foreign countries the engineering-profession is looked upon and is accepted in the same light as the medical and legal profession.

However, in United States a great portion of the public still think that an engineer is a person who operates a railroad engine or fires a steam boiler. The day is not too distant when the engineering profession will be strongly united as the medical and legal profession and wipe out this misconception. The trade unions will bitterly oppose this, because the can use the misconception as a to to lure members of the professio (particularly those who are not regi tered and can not become registered into becoming organized as a unio In fact, this lure has swayed some the designing and construction fiel

Through the forcefulness of t American Bar Association, the m conception of the legal bar with t bar in a cafe has passed into sublim The engineering profession can a complish the same change.

The engineering profession h come a long way in 43 years when t first engineering registration law w passed by the legislators of Wyomi in 1907 to the last and final ena ment of the engineering registrati act in the District of Columbia 1950. Today no State in the Unit States exists without an engineeri registration act. . . .

Modern civilization, in the intere of health, land and welfare of h manity makes it compulsory to re ulate the practices of all perso whose activities deal with the prote tion of life, health, rights and pro erty. These practices may be groupe into three major professions: me ical, legal and engineering, which a entrusted with the responsibility inci dent to such activity.

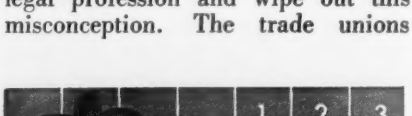
Dishonest and unqualified perso must be excluded and eliminated fro practicing where the public welfare at stake. The only answer to this registration. There is no other w that society can cope with a proble of this nature.

Some engineers voiced violent op position to registration as just another tax on their practices. However those who opposed it, soon recog nized their failings and became ar dent supporters of registration. The discovered that through registratio they were protected from competitio by noncompetent and the dishone and unworthy. Registration elim nated all this unethical competition.

A profession is judged by th qualification of all who use its name Registration established who is com petent and who is incompetent or un worthy. Registration sets a clear di viding line for public acceptance be tween lawful practitioners of the pro fession and those who are not admi ted to practice.

All professions should be em powered to disown those who hol themselves out as belonging to i without proper qualifications or char acter, and to the unfit and the un principled who seek to practice in its name.

Without registration laws there is no way to: 1. Stop practices of engi-



(EDITOR'S NOTE: *All those desiring to list their meetings under Dates to Remember should send* COMPLETE *information, including date and place, directly to the American Engineer.*)

New Jersey Society of Professional Engineers — Semi-annual Meeting and Shore Dinner, September 12. Old Orchard Country Club, Eatontown, New Jersey.

West Virginia Society of Professional Engineers—Annual Meeting, September 25, 26. Daniel Boone Hotel, Charleston, West Virginia.

Missouri Society of Professional Engineers—Annual Meeting, October 16, 17. Tiger Hotel, Columbia, Missouri.

National Council of State Boards of Engineering Examiners—Annual Meeting, October 29, 30, 31. Plaza Hotel, San Antonio, Texas.

NSPE Board of Directors Meeting—November 6, 7. Severin Hotel, Indianapolis, Indiana.

neering by non-engineers. 2. Stop the misappropriation and abuse of the incompetent and unworthy. 3. Oust from the profession those who prove incompetent and unworthy. 4. Preserve to the qualified engineer his rights of practice against restriction encroachment and unqualified competition.

Registration places the force and sanction of the law behind the desire of the profession to maintain a clearly recognized line of demarcation between the efforts and aspirations of the profession to maintain high standards of qualification and ethical practices.

An engineer in employment where registration is not required by law has no assurance that he will always be in that position. Many engineers have moved from employment into engineering practices for the public and have found their way handicapped by failure to obtain registration at the earlier date. This way you will not have the difficulty of seeking registration long after your academic training has ended.

Engineers have found registration has been helpful in engineering activities associated with their work even though their main work did not require registration. For example: One company put its chief engineer on the stand to testify as an expert witness in a legal case centered around a patent. The defense successfully disqualified the witness because he was not a registered professional licensed engineer. The courts upheld the decision.

Unless the engineers unite like the medical and legal professions, engineers may become the victims of union organizers and fronts. Engineering is a profession and not a trade, as the top-level union leaders would prefer. As a trade, the doors would be wide open to capture the individual rights of the engineers as union leaders have captured the individual rights of the trade worker. God forbid this happening to the engineers.

Today about 50% of the engineers in the United States are registered. I hope that by 1960 all the engineers will be registered.

No industry can hire a doctor unless he is licensed to practice medicine. No corporation employs an attorney unless that person has duly met the requirements of the law in his state. The day is not too far in the future when industry will not be permitted to appoint chief engineers unless they are registered, professional engineers.

Unions of course will oppose this thought. The Engineers and Scientists of America (ESA) claim to be the only independent bargaining group in America representing some "400,000 employed non-supervisory professional engineers and scientists who are so vital to our national defense and to our way of life." This group held its first annual convention in Los Angeles, February 1953. President Joseph Amann announced: "Representatives of Engineers and Scientists of America are prepared to meet other labor leaders and Senator Taft to discuss amendments to the Taft-Hartley Act. Engineers and Scientists of America is the only national organization whose members engage in collective bargaining with their employers to speak for the approximately 400,000 employed non-supervisory professional engineers and scientists who are so vital to our national defense and to our way of life."

Registration is vital to survive as a profession.

Letters

(*Continued from page* 5)

highways to the present high quality and standards. By studying the reason for the long life of those roads, engineers have learned many things, among them the fact that for any type of road construction to stand against the ravages of time and traffic, it must be well drained and have a firm foundation as well as being properly constructed with durable materials. By using this knowledge and other vital information garnered during the intervening years, present day engineers are able to design roads that are not as expensive, are more easily and quickly constructed with far less thickness, and which compare quite favorably with those ancient roads, considering the amount and type of traffic carried, for longevity of life and wearing qualities. It is quite possible that the amount of traffic borne, by some present day highways, is greater for one year than the total amount of traffic borne by some of those ancient roads from the time of their construction until now. It is also quite true that the speed, a great factor in the life of a road, at which traffic passes over present-day highways, is far greater than that of the traffic on the ancient roads.

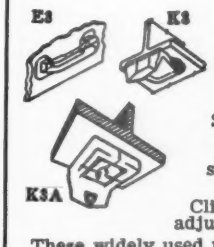
No. With as much exhaustive study as has been made on highway construction, it is hardly probable that much could be learned from further study of those ancient designs.

But, it is possible for better and longer lasting highways to be built today, if a more thorough and understanding study is made of the causes for failures within the past twenty-five to fifty years. Testing and research laboratories have rendered an invaluable service, during the past thirty years, in developing ways and means for improving the quality of highway construction, but their findings are still limited to laboratory conditions and experimentation. Actual experience and field tests must prove or disprove the value of those findings.

There are so many factors that enter into the quality and life of a highway, that one cannot accept any set and definite formula. It is quite possible that a type of construction which proves to be most satisfactory in one location, could be a miserable failure in another. The mere fact that the same specifications are used for both projects, does not mean that the quality and life of those two projects will be the same. For example, the writer is familiar with two projects that were built of the same materials, over similar terrain and under the same specifications, but designed and constructed by different engineers. Both projects were concrete pavement. After twenty years of service, one project shows excessive cracking while the other project presents comparatively few cracks.

It is the opinion of the writer that the quality and durability of the highways of today would be greatly improved by more intensified, on-the-job study of all actual conditions existing during the construction period, including earth study, method of construction, peak high and low temperatures, pavement design and all other items that would affect the service expected.

JOE H. KNIGHTON, P.E.,
Atlanta, Ga.



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THE COMMITTEE FUNCTION

BY PAUL H. ROBBINS, P.E.

Executive Director

N.S.P.E.

EACH year as the Society President announces committee assignments for his administrative term, it is well to pause and reflect on the tremendous importance of committee activity in a grass roots membership organization. The motivating force of any organization undoubtedly is its membership; but, just as a motor needs mechanisms through which its power is sparked and generated, so in an alert society the committees are the sparkplugs of programs and activities. As we consider the committee structure of NSPE, it is particularly impressive to note the number of individuals giving their time and talents to the advancement of the engineering profession.

In our three-level organization, the national committees form only a part of the vast network of activity on any particular subject. The national committees have two basic functions: (1) to provide a review group for screening suggestions which emanate from discussions at the chapter and state levels, and thus determine broad national policies for the coordination of professional activity; and (2) to provide direction and assistance to state and local committees through which coordinated action in the fields with which the committees are charged can be accomplished.

Too often we tend to think that the Society's activities generate from the national committees. Actually, however, the national committees' work is always reviewed by representatives of our state organizations and approved by them before any program is activated; and, in all cases, the committees, because of their widespread geographical representation, have the benefit of similar review at the state and local levels. When one stops to consider that there are well over 2,000 state and chapter committees working throughout the country on the various professional matters with which the National Society of Professional Engineers concerns itself, he realizes the degree of careful thought given to all programs before they emerge as a Society activity.

Scanning the list of committees indicates the scope of professional activity in which members of the Society are interested. Some of these committees are established under the Bylaws, and their duties are prescribed therein because they cover fields of continuing importance. Others are special committees which have been created for the purpose of studying a specific problem which faces professional engineers. Often these special committees find as they delve more fully into the subject that the problem is a continuing one, and it has been the Society's experience that there have been a number of special committees which have ultimately become standing committees. In addition, the NSPE Constitution authorizes the President to appoint other committees whenever he feels a particular problem needs special or urgent consideration.

Scanning the personnel who comprise these groups, we find a widespread geographical distribution which assures the presentation of the thinking of various parts of the country on the basic consideration of the problems involved.

While the general pattern for committee activity is prescribed both by Bylaw and by precedent, the functioning of individual committees may vary considerably. For example, the National Legislative Committee is largely concerned with national legislation and must, of necessity, operate in this field within broad general policies established by the Board of Directors. In contrast to this, the National Membership Committee concerns itself almost exclusively with being of assistance to state and local committees, since a well-known tenet of membership activity is the fact that the most effective membership programs are carried on at the local level.

In between these two types of activity are such programs as those concerned with ethical practices where it is recognized that ethics are established as individual members of the profession practice high standards in their relationships with the public, their employers, and their fellow professionals. Thus a major portion of ethical considerations must be resolved at the chapter level. On the other hand, each Chapter and State Society is desirous of following patterns which are recognized as beneficial to the profession as a whole, and so the National Ethical Practices Committee is concerned with broad interpretations of this kind which may serve as patterns for local and state consideration.

If one considers the function of the committee in the important programming of professional activities, he realizes the wisdom of the three-level type of organization where the individual member can directly participate in and develop his professional stature, at the same time permitting coordination of all this activity at the state and national levels.

President Forrest Names 1953-54 Committees

Below are listed the names of men who will aid new NSPE President T. Carr Forrest, Jr., in the conduct of his administration. They are the members of the Committees that help the Society function as a true three-level organization. The President urges all members to work with the Committee members and to pass their ideas for programs and actions along to these leaders.

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Alabama P.E.'s Resist Change In 'Eminence' Registration Provision

The important question of registration by virtue of the "eminence clause," contained in many state registration acts and the Model Law, came to a head recently in Alabama. The experience affords a close-up view of the problem and illustrates effective leadership by a state society.

The Model Law, endorsed by the leading engineering societies, includes provision for registration without examination by those with a specific record of twelve years or more of lawful practice in engineering work of a character satisfactory to the state board provided the applicant is not less than thirty-five years of age. The Alabama law does not contain a provision along this line and legislation was introduced, backed by the state engineering registration board, to add the "Model Law" section to the Alabama law. The Alabama SPE took a dim view of the proposed change, but before taking a definite position it was decided to poll all registered P.E.'s in the state. Two questions were asked:

(1) Do you favor the change in the registration law?

(2) If you do not favor the age 35 years, experience 12 years provision, would you approve an age 50 years, experience 25 years provision?

Of the 956 registered P.E.'s who received the questionnaire 556 responded, thus providing the consensus of 58% of the P.E.'s in the state. The answers to the two questions were tabulated by the Alabama SPE as follows:

	YES %	NO %	BLANK %
Q. #1.	16 (2.88)	533 (95.86)	7 (1.26)
Q. #2.	107 (19.24)	317 (68.17)	70 (12.59)

Commenting on these returns, NSPE National Director L. W. Peterson of the Alabama Society, commented: ". . . it seemed very emphatic that a huge majority of the registered engineers in the state were definitely opposed to the old model law which the Board was in favor of, and also a high percentage was in favor of no eminence clause whatsoever."

Fortified with this impressive material, the Alabama SPE representatives appeared at the State Capitol on the morning the bill was to be presented to the House and presented the facts to key legislators. The result was that the bill was defeated by a vote of 50 to 30. The bill could still be acted upon by the State Senate but the Alabama SPE feels that the Senate will not consider it in view of the action of the House.

The Alabama Society has advised that it stands ready to consult with other state societies having an interest in this particular feature of the Model Law and pass on the knowledge gained as a result of their recent experience. In reporting this action to the National Society, National Director Peterson pointed out that the question of "eminence" registration has been discussed extensively at the national level and that the NSPE Board had approved a recommendation of the NSPE Registration Committee to the effect that the present eminence provision of the Model Law "is a very weak provision and one which will cause considerable dissension between state boards. We believe that this society should recommend to the other societies concerned that it be removed from the Model Law."

With Our Members . . .

Summer Entertainment

Family Picnics and Country Club Parties Are Summer Highlights for Many P.E.'s

From coast to coast this summer, picnics, country club parties, and other similar events have been highlighting the June, July, and August program schedules of both State Societies and Chapters.

The Ohio Society of Professional Engineers had arranged its annual outing for August 24 through August 30 at Camp Muskingum on Leesville Lake near Carrolton. Meanwhile the North Central Chapter of the OSPE has sponsored the annual chapter outing at the Wooster Country Club where a day of golf was followed by a turkey dinner. Cleveland engineers also held their annual family picnic in June on the Brecksville Reservation and their annual golf party on July 16 at the Pine Ridge Country Club in Wickliffe.

June picnics were also sponsored by the Western and St. Louis Chapters of the Missouri SPE, the East Bay Chapter of the California Society, and the Capital Chapter of the Illinois SPE. The Galveston Chapter, Texas SPE, recently held a smorgasbord at the Telephone Company's local camp; and the Midwestern Chapter P.E.'s of the Pennsylvania Society have a day of golf and cards, to be followed by a dinner meeting, scheduled for August 21 at the Connoquenessing Country Club, Ellwood City.

July 25 was the date chosen by the Rockford, Illinois, engineers for their annual picnic at the Oregon Country Club with Frank Braconier and Ted Bradley in charge of the arrangements.

B. E. Brevik Honored By Portland Cement Ass'n.

Berry E. Brevik, an Appleton, Wisconsin, engineer and past president of the Fox River Valley Chapter, Wisconsin Society of Professional Engineers, was honored recently at a testimonial dinner in Milwaukee in recognition of his twenty-five years of service with the Portland Cement Association.

Mr. Brevik is a native of Sioux City, Iowa, and holds a B.S. in engineering from Iowa State College and a Master's degree from the University of Michigan. Before joining the Association in the Chicago offices, he had been an engineering instructor at the University of Minnesota and an assistant professor of engineering at Iowa State College. Since 1943 he has been serving as a general field engineer assigned to the Fox River Valley.

During the testimonial dinner, Engineer Brevik was presented with an engraved watch by C. D. Franks, Chicago, President of the Portland Cement Association.

FBI Agent Addresses Appalachian Chapter

Special Agent Thomas C. Allen of the Federal Bureau of Investigation was the guest speaker at a recent meeting of the Appalachian Chapter of the West Virginia Society. President J. P. Hindsley presided at the meeting which was held in the El Chico Restaurant in Beckley, W. Va.

Delaware P.E. Unearths Historical Landmark

Leroy M. Haitsch, a Wilmington, Del., civil engineer and member of the Delaware SPE, played a leading role recently in the rediscovery of the long lost site used by surveyors Mason and Dixon as a reference point for drawing the famous boundary line that bears their names and for measuring a degree of longitude in North America.

The original marker of the site was a wooden post, the exact location of which had been forgotten over the years despite its historic and scientific significance. In 1951, however, William T. Mahoney, a retired DuPont Company executive, began to study existing historical records in order to determine the location of the vital site. The actual task of locating it was undertaken by Mr. Haitsch who, working on the basis of the historical data furnished by Mr. Mahoney, unearthed the famous site on the farm of S. Hallock duPont near Newark.

The site is now marked by a granite shaft, unveiled by Engineer Haitsch during a recent dedicatory ceremony, bearing the inscription: "This post used as a base point in the survey of the Mason-Dixon line, 1763-1767. Located by W. T. Mahoney and L. M. Haitsch. Marker erected by S. Hallock duPont."

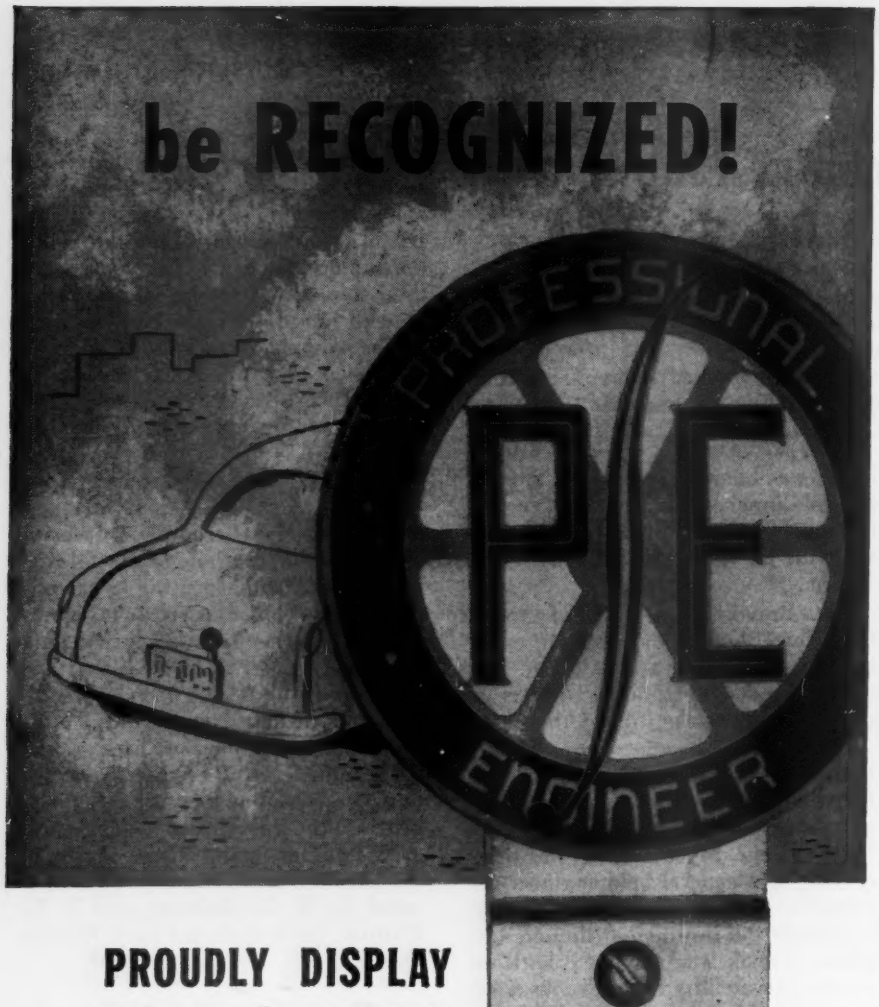
Dean Dougherty Speaks At Knoxville Event

At a recent meeting of the Knoxville Chapter, Tennessee SPE, N. W. Dougherty, Dean of Engineering at the University of Tennessee and an NSPE Vice President, gave a report on the national meeting in Daytona Beach, Florida.

A movie, entitled *Expressways*, was also shown during the meeting by Mr. Oscar King.

Chapter President S. E. Johnson presided at the event.

ANNUAL MEETING SCENES.—The pictures here were taken during the National Society of Professional Engineers' recent annual meeting in Daytona Beach, Florida. At the left is a scene during one of the general sessions of the Board of Directors. At the right, Past President Perry T. Ford addresses one of the assemblies, while President John D. Coleman (left) and Vice President Edwin W. Seeger (right) listen attentively.



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Missouri Plans Ahea

Members of the Missouri SPE ar already at work on plans for the So ciety's annual meeting, scheduled fo October 16 and 17 in Columbia at th Tiger Hotel. The theme of the mee ing will be the *Utilization and Train ing of Engineers,* and NSPE Presiden T. Carr Forrest, Jr., has been invited to make the main address at the an nual dinner on the evening of Octo ber 16.

The Society's E.I.T. Committee ha developed three different question naires which will be sent respectively to 900 E.I.T. enrollees, 200 P.E.'s, and 100 employers of engineers in the State of Missouri. The purpose of the survey is to sample a cross-section of thinking relative to professional regis tration, professional society member ship and participation, and a suggested program for the professional develop ment of engineers-in-training.

The Aims and Activities Committee of MSPE is also currently emphasiz ing four main programs for State and Chapter attention: (1) The sending of a letter from the State Society presi dent to the employers of all E.I.T. en rollees, advising of the enrollee's status and requesting cooperation in encour aging further training and profes sional development; (2) Chapter pro grams devoted to the NSPE Executive Research Survey Reports; (3) Ap propriate action to determine why registered P.E.'s who are not members have not affiliated with the Society; and (4) Suitable programs for the presentation of registration certifi cates and enrollment ceremonies at Chapter meetings.

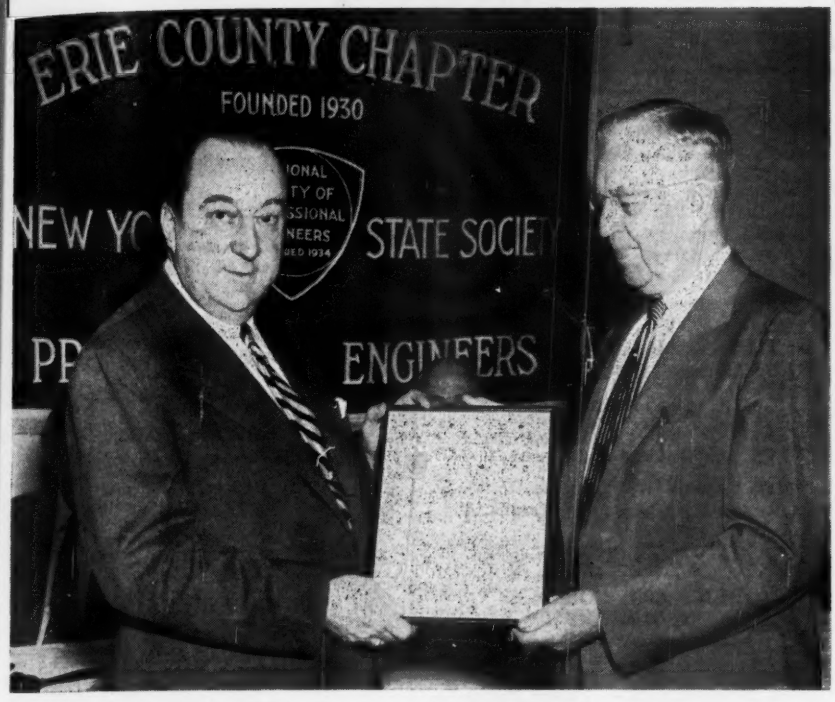
Lorain County Officers

New officers of the Lorain County Chapter, OSPE, who were installed at a recent dinner meeting at the Elyria Country Club, are: Stephen Johnson, Jr., President; Donald Kropp, Vice President; Darold A. Augustin, Secre tary; Francis R. Hoke, Treasurer; Roswell H. Herrick, State Trustee; A. J. B. Fairburn, Alternate Trustee; and C. P. Stocker, Lyle C. Ziegler, and Robert J. Stilgenbauer, Directors-at large.

Movie In Topeka

Topeka, Kansas, engineers, at the last meeting of their 1952-53 adminis trative season, viewed an Armco Drainage & Metal Products Company movie, entitled *The Big Pipe Ma neuver.* The election and installation of officers for the 1953-54 term was another highlight of the evening.

Erie County Honors E. J. Nunan



Edward J. Nunan, immediate past president of the New York State SPE, was presented with a certificate of appreciation recently by the Society's Erie County Chapter. The above photo shows Mr. Nunan (left) accepting the award from Charles R. Waters, the first president of the Erie County group. The honoree also served as president of the chapter at one time.

California Chapters Have Many Summer Plans

Many California Chapters have been continuing their lecture and plant tour programs during the summer months. One such event was the July 22nd tour of the Fontana Plant of Kaiser Steel made by members of the Pasadena Chapter.

Another was the July 14th meeting of the San Jose Chapter, held in the Lecture Hall of the San Jose State College Engineering Building. The program feature for this occasion was the lecture on contracts and related legal documents delivered by Attorney E. Bean of Bean and Bergna. The chapter has also reported another recent meeting at which George L. Sullivan, Dean of Engineering at the University of Santa Clara and Vice President of the State Board of Registration, was the speaker.

New plans and activities were the subjects discussed at a recent meeting of the Golden Gate Chapter, and in July members of the East Bay Chapter heard John A. Sketchley, safety engineer for the State Compensation Insurance Fund, as guest speaker. The latter group is also playing host to all Bay area chapters at an August 17 dinner during which news-caster John K. Chapel will deliver the principal address.

Blacksburg Chapter P.E.'s Tour Celanese Plant

P. A. Mansfield, plant manager of the Narrows, Virginia, plant of the Celanese Corporation of America, was host to the Blacksburg Chapter, VSPE, at a recent dinner meeting followed by an inspection trip through the plant.

Virginia SPE President D. Pletta spoke briefly during the dinner, outlining the Society's activities at the state level; and Carl R. Delagrange reported on a previously-held joint meeting of the Virginia Engineering and Technical Societies which took place in Norfolk. P. F. Brown of the Virginia State Department of Professional and Occupational Registration was a guest of the chapter at the meeting.

Monmouth-Ocean P.E.'s Hear Floyd P. Ayres

Floyd P. Ayres, Bay Head engineer and boat designer, was guest speaker at a recent meeting of the Monmouth-Ocean Chapter of the New Jersey Society of Professional Engineers and Land Surveyors at the American hotel in Freehold. Lawrence Wagner, program chairman, introduced Mr. Ayres.

Important factors in both power and sail boats and the designing of such craft, were brought out by Mr. Ayres. He also related some experiences he had while in the Navy durin World War II and while designing power-boats operated by remote control from a Navy blimp.

During the business meeting conducted by John Ernst, the following officers were elected: President—George Ritter; Vice Presidents—Leonard G. Grasser and Kenneth Fox; Secretary-Treasurer — Craig F. Haaren; Directors—George A. Platt and George DeGarmo, and Trustee to the State Society—George W. Howland.

This group will be hosts at the semi-annual shore dinner and outing in September at Old Orchard Country Club.

. . . *More News on page 35*

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General C. H. Arnold Is Savannah Speaker

At their final meeting of the 1952-53 season, members of the Savannah Chapter, Georgia Society of Professional Engineers, heard General C. H. Arnold, Ret., discuss organization and planning problems in the Army's Procurement and Supply units and their relation to similar problems encountered in engineering organizations.

Chapter President W. Lee Mingledorff, Jr., officiated at the meeting, and James Artley introduced the guest speaker.

Architect Lectures In Tulsa

J. R. Koberling, a Tulsa architect, spoke on *Classifications of Services Performed by Architects and Engineers* at a recent meeting of the Tulsa Chapter, Oklahoma Society of Professional Engineers. Allen Whiteside and Donald R. McCormick, also outstanding Tulsa architects, were present to contribute to the informative discussion that followed Mr. Koberling's address.

Engineer C. Cone of the Dresser Engineering Company presided at the meeting.

Peninsula Chapter Slate

Officers for the 1953-54 term recently installed by the Peninsula Chapter, California SPE, include: Edward Hayes, President; Petrus Carlson, Vice President; Robert Braun, Secretary; Jack Fuller, Treasurer; James Aldrich, State Director; and James Atkinson, Johan Krabbe, and George Warfel, Directors.

Traffic Problems Concern Central Illinois Group

Members of the Central Illinois Chapter, ISPE, recently heard a panel discussion of Decatur Traffic Problems presented by Police Lieutenants Kitch and Beckler.

Edwin O. Crawford is president.

. . . More News on page 37

CALIFORNIA CONVENTION GROUP.—The engineers pictured above were photographed at the CSPE convention in Fresno, Cal., as George E. Zelhart, then State president, awarded the CSPE Certificate to the San Diego Chapter. Left to right are: Eugene A. Balas, San Diego Chapter president; C. K. Sencebaugh, state director from San Diego, who is receiving the certificate; C. D. Allen, new CSPE president; John D. Coleman, then NSPE president; Mr. Zelhart, and R. Rich, a charter member of the honored chapter.

Professional Directory

Alphabetically Arranged by States . . . *. . . New York - Pennsylvania*

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Of the American Engineer readers queried in a recent survey . . .

78.4% have a purchasing or specifying capacity.

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Alabama Industral Growth Is Speaker's Theme

At a recent dinner meeting, members of the Birmingham Area Chapter, Alabama SPE, heard William P. Engel, past president of the Birmingham Chamber of Commerce, and an executive committeeman of "The Committee of 100," speak on the industrial growth of the State. The title given to his address was *Engineers, Think BIG;* and he emphasized the increasing opportunities that the South is now offering the professional engineer.

At the same meeting, Wallace McRoy, chairman of the membership committee outlined his plans for a membership campaign in which every active P.E. in the chapter is expected to participate.

With the Ladies

By MRS. WILLIAM FELL
NSPE Ladies' Advisory Committee

An increase of eleven auxiliaries in the past year has been reported to the chairman of the NSPE Ladies' Advisory Committee. Seventeen others are reported to be in process of organizing or are interested in organizing. The auxiliaries reported as functioning at this time total thirty-four. Names of groups not previously published are:

Northeastern Area

Pittsburgh Chapter Auxiliary,
Pennsylvania SPE, Pittsburgh, Pa.
President, Mrs. Glen M. Comstock, 1319 Murdock Road, Pittsburgh 17, Pa.

Southeastern Area

South Piedmont Chapter Auxiliary,
North Carolina SPE, Charlotte, N. C.
President, Mrs. Don Quisenberry, 831 E. Morehead Street #703, Charlotte, N. C.

Memphis Chapter Auxiliary,
Tennessee SPE, Memphis, Tennessee.

Knoxville Chapter Auxiliary,
Tennessee SPE, Knoxville, Tennessee.

Central Area

Lorain Chapter Auxiliary,
Ohio SPE, Avon Lake, Ohio.
President, Mrs. Rockwell Herrick, Avon Lake, Ohio.

Milwaukee Chapter Auxiliary,
Wisconsin SPE, Milwaukee, Wis.
President, Mrs. E. W. Seeger, E. S. M. Bldg., 3112 W. Highland Blvd., Milwaukee, Wis.

Southwestern Area

Rio Grande Valley Chapter Auxiliary,
Texas SPE, Brownsville, Texas.
President, Mrs. J. C. Harris, 1544 W. Washington, Brownsville, Texas.

Albuquerque Chapter Auxiliary,
New Mexico SPE, Albuquerque, N. M.
Chairman, Mrs. James House, 501 Hermosa Drive, S. E., Albuquerque, N. M.

Strictly Business

Personalities . . . PHILIP J. HERBST now heads the Communications Engineering Section of RCA VICTOR's Engineering Products Department, Camden. N. J. . . . H. P. JACKSON and ROBERT H. BARCLAY have been elected vice presidents, for construction and engineering respectively, of the J. G. WHITE ENGINEERING CORPORATION of New York City. . . . The boards of directors of The VITRO MANUFACTURING COMPANY, VITRO CORPORATION OF AMERICA, and VITRO CHEMICAL COMPANY, have announced the election of J. CARLTON WARD, JR., Farmington, Conn., as president of the corporations, and of CHARLES S. PAYSON of New York as chairman of the boards of directors. . . . W. J. MCINTOSH has been appointed district engineer in charge of the New York Office of the PORTLAND CEMENT ASSOCIATION. . . . ALBERT H. BAGENSTOSE is the new Eastern regional manager and JOHN J. MILLER the Midwestern manager for the INSUL-MATIC CORPORATION OF AMERICA, both to work from the home office in Pittsburgh.

KING DESEVE has been promoted to manager of manufacturing operations by the WARNER ELECTRIC BRAKE & CLUTCH COMPANY, Beloit, Wis., and CHARLES MODERSOHN has been named chief engineer of the Industrial Division of the same firm. . . . C. M. DONAHUE, manager of the Mining Department and the International Division, and E. G. SANNER, manager of Manufacturing, both with the MINE SAFETY APPLIANCE COMPANY, Pittsburgh, Pa., have been elected vice presidents of the firm. . . . CHARLES F. HAUCK is the new sales manager and BRUCE ALEXANDER the new assistant sales manager of the Chemical Plants Division, BLAW-KNOX COMPANY, Pittsburgh. . . . FRANK X. GILG has been appointed an executive assistant in the Boiler Division, THE BABCOCK & WILCOX COMPANY, New York City. . . . A. G. BISSELL, Seattle, Washington, is now engineering consultant to the Nelson Stud Welding Division of GREGORY INDUSTRIES, INC. . . . CLARK M. HUMPHREYS has been appointed acting director of research for the AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS. . . . L. H. OPPENHEIM has been named a vice president of the HENRY J. KAISER COMPANY, and will also continue in his position as assistant general manager of KAISER ENGINEERS, Oakland, Cal.

At the CHEMSTRAND CORPORATION nylon plant now under construction in Decatur, Alabama, GEORGE MALINOFF will be area supervisor and ASA CULVER operations supervisor in the polymer and spinning departments, while E. R. BONER will assume the post of service superintendent. . . . DEAN WEIKART, formerly tool and product engineer with ROCKWELL MANUFACTURING COMPANY's Crescent Machine Division at Leetonia, Ohio, has been promoted to chief engineer of the firm's Tupelo, Miss., plant. . . . JAMES B. KELLY is now a vice president with the MCCLOSKEY COMPANY of Pittsburgh, Pa. . . . J. LEWIS has been elected vice president in charge of all production by the HYSTER COMPANY board of directors and has assumed the position in the Portland, Oregon, home office. . . . The ATLAS MINERAL PRODUCTS COMPANY has announced that JOHN C. BOVAN and GEORGE BAUMGARTNER have accepted positions in the engineering and research departments respectively.

►

Contract Awards . . . The New York engineering firm of PARSONS, BRINCKERHOFF, HALL & MACDONALD has been awarded the contract for the design and supervision of the Hampton Roads Crossing Project, Hampton Roads, Va., by the Commonwealth of Virginia Department of Highways. . . . A contract for the construction of a new fibre milk container plant at Needham, Mass. has been awarded by AMERICAN CAN COMPANY to the TURNER CONSTRUCTION COMPANY.

►

Plant Expansion . . . E. J. BRADY, president of the ALLOY RODS COMPANY, York, Pa., has announced that construction has started on a new plant of the company in El Segundo, Los Angeles County, California. The building site is situated near the Los Angeles International Airport in the new industrial area now being developed by the Santa Fe Railroad.

A new $3,000,000 manufacturing plant is being erected in Burbank, California, by the MCNEIL CONSTRUCTION COMPANY of Los Angeles for the LOCKHEED AIRCRAFT CORPORATION. The new hangar-like structure, which will vastly increase the manufacturing capacity of LOCKHEED when complete will be 85 feet in height, approximately that of a normal six-story office building. The all-clear interior will be 60 feet from the floor to the counter-balanced three-hinged trussed arches, said to be the largest in the world.

The BELL AIRCRAFT CORPORATION of Buffalo has purchased a second 20,000-square-foot standardized steel building from the LURIA ENGINEERING COMPANY, Bethlehem, Pa., for erection at its helicopter manufacturing plant in Hurst, Texas. The new structure, like an identical building erected last May, will be used as an assembly and flight-test plant for BELL's new twin-rotor helicopters.

Construction of a $4,000,000 gypsum board plant and plaster mill in Seattle has been authorized by the board of directors of KAISER GYPSUM COMPANY, INC., according to an announcement from President HENRY J. KAISER. Final plans and specifications for the new facility have been ordered prepared immediately, and construction will begin in the fall. The schedule calls for the plant to be in operation by December of next year.

◄

Reorganization and Changes . . . REO MOTORS, INC., Lansing, Mich., has announced the formation of a Military Engineering Department, under the direction of W. A. JENSEN, assisted by G. D. TOOKER and H. T. INGERSON. The activities of the department will be directed toward the study and development of advanced types of wheeled vehicles for the armed forces. . . . The KOLD-HOLD MANUFACTURING COMPANY, Lansing, Mich., manufacturer of refrigeration equipment and products in the industrial and domestic heating fields, has changed its corporate name to TRANTER MANUFACTURING, INC. . . . Merger of FEDERAL ELECTRIC PRODUCTS COMPANY, a Delaware corporation with headquarters in Newark, N. J., and PACIFIC ELECTRIC MANUFACTURING CORPORATION, a California firm with executive offices in San Francisco, has been announced by T. M. COLE and J. S. THOMPSON, the respective presidents. . . . Organization of two major divisions of the B. F. GOODRICH COMPANY, Akron, O., integrating sales, manufacturing, and necessary staff functions has been announced by JOHN L. COLLYER, president. The two are: The B. F. GOODRICH COMPANY TIRE AND EQUIPMENT DIVISION with ARTHUR KELLY as president, and The B. F. GOODRICH COMPANY INDUSTRIAL PRODUCTS DIVISION, of which CLYDE O. DELONG will be president.

Tax

(*Continued from page* 8)

practice." (Italics added). It may be questioned whether the Court would have come to the same conclusion if the case had involved a professional person who did not "need" the additional education, but who was curious enough, or proud enough of his intellectual development and his profession, to "want" to further his knowledge.

In view of the considerable doubt which exists and the importance of doing everything possible to encourage and support those who voluntarily desire to undertake the addition of knowledge for themselves and the nation, we submit that H. R. 4393 should be enacted. This bill will remove the present legal cloud regarding the deductibility of expenses incurred in the educational endeavor. The National Society of Professional Engineers fully agrees with and endorses the statement of Representative Davis, the author of H. R. 4393, that "... our Government has delayed in doing the fair and just act of placing professional people on the same basis as business and industry. It is high time that this discrimination should be eliminated . . ." The immediate small loss in Federal revenue which might be involved, would, in our opinion, be more than offset from a long-range standpoint by the eventual higher return from those who improve their standing and income by the acquisition of new and valuable knowledge, as well as the major benefits which the nation will derive from the additions to our general store of knowledge.

We respectfully urge the Committee to act favorably upon H. R. 4393 in the interests of ever-increasing contributions to the national welfare by the professional population of the nation.

McKay

(*Continued from page* 12)

The preference clause has also been used as an implement for the Federal control of power rates and management at the local level. I am convinced that this practice is not in keeping with the intention and purposes of the preference clause.

FEDERAL power should be brought into communities and distributed by whatever retail systems prevail in the community at the time the power is available. If preference customers are there and ready to buy power, they should be so recognized and be given the power they require. That power should be sold on the basis of long-term contracts; and by the same token the remaining power should be made available to other customers in the area, also on the basis of equally long-term contracts.

There is another aspect of the preference clause. This is one that is certainly not in keeping with sound business judgment. It has been the effort and ambition to extend transmission lines all over the country, solely for the purpose of serving preference customers who are beyond reasonable marketing distance from the source of power. These are matters that can be changed through the administration of the Act.

Once we depart from the conception of a Federal power monopoly, tied into local public power which can later easily be taken over by the Federal wholesale power system, we should be well along on the path to eliminating many of the disturbing consequencies that the Federal power system has brought to our States and communities.

Turning back all of our Federal power systems to private enterprise, in my judgment, is out of the question. It would be a grave policy error to support that type of program. All our people, I am sure, agree that when the Government produces hydroelectric power, that power should be available to all the people. Whatever we may say about the efficiency of private enterprise in the distribution of electric energy, neither this Administration nor any other should turn our federally produced power projects over to private business. As for me, I have no intention of being a party to transforming any of these federally built projects into private operations.

Under the new Administration we expect to follow a sound, sensible power policy. We will continue within the limits that the national budget will permit with construction of such of these projects as are economically feasible and fall in the proper category of Federal projects. We will encourage to the utmost extent possible the construction and management of facilities by the States, municipalities, public agencies and private enterprise.

I, personally, am neither for nor against either private or public power. I believe both of them have their place in the American plan of life. Our primary purpose must be the orderly and systematic development of our national resources, the increase of our power capacity, and the development of the uses of electricity.—***End.***

Need Help with an unfamiliar engineering problem?

Consult a specialist. Look in the Professional Directory, pages 34-37.

New Jobs

(*Continued from page* 22)

as possible. It is best to limit it to one typewritten page. Remember that a resume is a personal thing and each man must tailor his own to suit his background and personality.

A very brief letter of transmittal containing no more than two or three paragraphs should accompany the resume. A long letter might easily nullify the effect of the best planned resume. A good letter might read as follows:

"Gentlemen:

In response to your advertisement in today's *Times*, I am submitting a resume of my background and experience.

I would appreciate the opportunity of showing you some of the work I have done and of discussing with you my potential value to your firm.

Sincerely yours,"

Once your "ad" has been read and an interest in you created in the mind of the personnel manager or chief engineer, you will be called for an interview.

Now your marketing program requires selling techniques. Take a good look at your salesmen friends. Find out how they sell a product. Remember now, you are selling a product—and the product is *you!*

Check your appearance. You cannot help it if you are tall or short, fat or thin, blond, brunette or bald, but you can assure that you are well groomed, shaved, with shoes shined, and finger nails clean. Dress neatly, but conservatively. A flashy tie or wearing a sharp sports ensemble at an interview has cost many a man a good job.

Be prepared to answer questions about yourself, your background, work-experience and education. Some personnel men ask personal questions about your childhood, your home life and your hobbies. A good salesman knows his product well and can answer all questions about it. Nobody knows this product better than you. Prepare yourself for the interview by asking yourself the questions you think you would want answered if you were doing the hiring.

There are certain questions that are sure to be asked. The interviewer will usually want to know just what kind of work you have been doing. You

(*Continued on page* 40)

New Jobs

(*Continued from page* 39)

should be ready to give him a concise, yet complete account of that. He will want to know why you left your previous job or why you want to leave your present one. He will ask you about your past earnings. He will inquire as to your education, your military service and many other phases of activity.

Answer each question frankly and with as few words as possible. Do not digress and get involved in unrelated details. The interviewer is a busy man and is not interested in your life history, political views or stories about your friends. He wants precise answers to questions . . . and that is all.

Just as a salesman must size up his prospect, so must an applicant analyze his interviewer. The key to this can be summed up in one word: *listen!* Do not become so involved with yourself that you do not listen to the questions or remarks made by the interviewer. You can learn a great deal about the other man and his company by his manner. If he is the type that likes to do a good deal of talking, listen to him and do as little talking yourself as possible. Many a man has obtained his job by almost absolute silence. He knows the little trick of listening carefully to a verbose person and just interjecting remarks at pertinent places in the conversation. When the interview is over, the interviewer, who has done all the talking has sold himself on you because you listened to his too many words. This is poor interviewing, but if you can size up your man as that type, it might get you the job.

If the interviewer is the silent type, he will expect you to carry the conversation. In this case, it is your chance to steer the interview to stress your strongest points and pass over your weak points rapidly. The danger here again is overselling yourself by too much talk.

Most interviews will be somewhere between these extremes. You will have to be alert to the interviewer's reactions and analyze his intent and his methods.

A good method of aiding your sale is the use of visual material, such as charts, drawings you have made, copies of plans you have designed, and any other work which shows what *you* have done. These should be neatly arranged in a brochure similar to that used by salesmen. This will certainly make you stand out as the interviewer is more likely to be impressed with examples of your work than just by your saying you have done it.

If the interviewer has not told you anything about the job and the company, you should inquire. It is as important for you to know about the job as it is for the interviewer to know about you. A good personnel man will tell you about this sometime during the interview. Some men discuss this immediately. Others wait until they feel they are interested enough in you to take the time to describe the job to you. Very few men will resent your questions about their company, and most will be happy to talk to you about it and have more respect for you because you asked.

Closing the interview is the prerogative of the interviewer. He will usually bring it to a close when he feels he has enough information about you. When he does this, accept it immediately and do not try to extend the interview. Many a job has been lost because the applicant talked too much and would not let the interview come to a close at the right time.

Following up an interview is almost as important as the resume and the interview itself. Surprisingly, very few applicants do this. The interviewer sees a number of applicants for each job. It is important for you to do something to make him remember you. It may make the difference between your obtaining the job or losing out to a competitor. One good method is to write a short note thanking him for the courtesies extended during the interview. This should be written as soon as possible after the interview. The note should be very brief. The following is typical:

"Dear Mr. Jones,

Thank you for the courtesies extended to me at our meeting yesterday afternoon.

I am certain my background and experience in machine design and factory layout qualify me for the position of Mechanical Engineer in your organization and will enable me to be a valuable asset to the Jones Company.

Sincerely yours,"

Another very effective method is the presentation of your ideas on problems facing the company. This can only be used when specific problems were discussed in the interview.

If, for example, the interviewer mentioned the firm was having trouble with material handling equipment, you might submit a brief outline of your ideas on this subject to him. This will not only make your application stand out against competition, but will show management that you have given some thought to the job. It will also give them a concrete idea of what you can do for them. It is best to present these ideas in outline form with as little verbiage as possible. Concise, factual presentation is most effective.

Yes, finding a job requires the same effort and thought as marketing a product. Engineers, who desire to change positions or who are looking for a new job, must recognize this fact and treat this problem as a selling problem. Then, and only then, will they be able to strengthen their job-finding techniques and sell themselves successfully for better jobs, higher pay and a more rewarding future.

—*End.*

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An article every thinking individual will remember . . .

Needed: A Sure Sense of Values

By

Bernard M. Baruch

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Nat. Dir., Joseph H. Powers, 1750—16th St., N. W., Washington, D. C.

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Nat. Dir., E. A. Anderson, 1301 Court House, Miami 32, Fla.

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Pres., A. O. White, Jr., 1417 Cit. & So. Bank Bldg., Atlanta, Ga.
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Idaho

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Nat. Dir., Leigh M. Huggins, 1621 Mountain View Drive, Boise, Idaho.

Illinois

Pres., Raymond G. Brichler, 7903 West A St., Belleville, Ill.
Exec. Sec., P. E. Roberts, 631 E. Green St., Champaign, Ill.
Sec. Treas., A. Douglas Spicer, 138 Payson St., Kewanee, Ill.
Nat. Dirs., Lee I. Osborn, Sherrard, Ill.; George DeMent, Rm. 1940, 20 N. Wacker Dr., Chicago 6, Ill.

Indiana

Pres., J. B. Wilson, 524 K. of P. Bldg., Indianapolis, Ind.
Sec., R. E. Long, 6220 Nimitz Dr., Indianapolis, Ind.
Exec. Sec., Thelma G. Patterson, 1131 Circle Tower Bldg., Indianapolis, Ind.
Nat. Dir., L. Eugene Easley, 6511 Evanston Ave., Indianapolis, Ind.

Kansas

Pres., Vernon W. Barlow, Monarch Cement Co., Humbolt, Kans.
Sec., James E. Myers, 1111 East Central, Wichita, Kans.
Nat. Dir., Walter G. Johnson, 1831 Medford Ave., Topeka, Kans.

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Sec. Treas., Wm. G. Robertson, Jr., 2315 St. Paul St., Baltimore, Md.
Nat. Dir., Owen W. Turpin, 1004 N. Charles St., Baltimore, Md.

Massachusetts

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Michigan

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Nebraska

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Sec., A. R. Homan, 5970 N. 33rd St., Omaha, Nebr.
Nat. Dir., B. H. Backlund, 5225 Kansas Ave., Omaha, Nebr.

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Sec. Treas., Merle Powers, 86 E. State St., Trenton, N. J.
Exec. Dir., Charles J. Dodge, 86 E. State St., Trenton, N. J.
Nat. Dirs., Edward R. Boate, 404 Everson Place, Westfield, N. J.; Louis F. Frazza, 225 Bamford Ave., Hawthorne, N. J.; Frank F. Hornholt, 37 Oak St., Tenafly, N. J.; W. Earl Christian, Netherwood Ave., Box 215, Rt. 2, New Brunswick, N. J.

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Exec. Sec., Herald Beckjorden, 1941 Grand Central Terminal Bldg., New York, N. Y.
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North Carolina

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Sec., Robert B. Cochran, Jr., Box 5131, Raleigh, N. C.
Nat. Dir., M. F. Wooten, Jr., 215 Latta Arcade, Charlotte, N. C.

North Dakota

Pres., Edward J. Booth, 804 Tenth St., Bismarck, N. D.
Sec. Treas., Joseph Kirby, 827—13th St., Bismarck, N. D.
Nat. Dir., R. H. Myhra, Box 112, Minot, N. D.

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Oklahoma

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Sec. Treas., Cecil Perkins, 1308 First Nat'l Bldg., Oklahoma City, Okla.
Exec. Sec., C. S. Worley, P. O. Box 987, Oklahoma City, Okla.
Nat. Dirs., Clark A. Dunn, A & M College, Stillwater, Okla.; G. W. McCullough, 1815 Johnston Ave., Bartlesville, Okla.

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Nat. Dirs., Ezra K. Nicholson, 1618 Latimer St., Philadelphia, Pa.; Donald C. Peters, Mellon-Stuart Co., Pittsburgh, Pa.; Robert A. Blackburn, 3110 Koppers Bldg., Pittsburgh, Pa.; Allan H. Kidder, 900 Sansom St., Philadelphia 5, Pa.

Puerto Rico

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Nat. Dir., Alberto Hernandez, Box 1244, San Juan, Puerto Rico.

Rhode Island

Pres., Howard F. Carpenter, 37 Ernest St., Providence, R. I.
Sec., Howard W. Holmes, 98 Burlington St., Providence 6, R. I.
Nat. Dir., Vincent DiMase, 10 Edendale Ave., Providence, R. I.

South Carolina

Pres., Roy A. Stipp, 228 N. Main St., Box 1796, Greenville, S. C.
Sec. Treas., A. N. Stall, 56 Woodvale Ave., Greenville, S. C.
Nat. Dir., C. Langdon Cheves, 110 Tindall Ave., Greenville, S. C.

Tennessee

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Sec., Charles L. Ridings, 300 Chamberlain Bldg., Chattanooga, Tenn.
Nat. Dir., Warner Howe, 76 Porter Bldg., Memphis, Tenn.

Texas

Pres., J. Neils Thompson, 2403 Tower Dr., Austin, Tex.
Exec. Sec., Henry Harkleroad, 403 Nash Bldg., Austin, Tex.
Nat. Dir., Noah E. Hull, P. O. Box 2545, Houston, Tex.

Utah

Pres., Harold S. Carter, 4121 Carter Circle, Salt Lake City, Utah.
Sec., C. C. Burt, 502 Zions Savings Bank Bldg., Salt Lake City 1, Utah.
Nat. Dir., Walter P. Henoch, 227 S. 4th East, Salt Lake City, Utah.

Virginia

Pres., Dan H. Pletta, Box 366, Blacksburg, Va.
Sec., Box 366, Blacksburg, Va.
Nat. Dir., John B. McGaughy, 21st at Llewellyn Ave., Norfolk, Va.

Washington

Pres., L. R. Durkee, 511 New World Life Bldg., Seattle 4, Wash.
Exec. Sec., Ed Smith, Organization Service Bureau, American Building, Seattle 4, Wash.
Nat. Dir., Howard A. Stingle, E. 3157 30th, Spokane 6, Wash.

West Virginia

Pres., O. J. Swanson, Box 27, Gary, W. Va.
Exec. Sec., Ross B. Johnston, P. O. Box 249, Charleston, W. Va.
Nat. Dirs., Leslie C. Gates, P. O. Box 672, Beckley, W. Va.; Harry G. Kennedy, 1307 Kanawha Valley Bldg., Charleston, W. Va.

Wisconsin

Pres., P. G. Ellis, 2318 Rowley Ave., Madison 5, Wisc.
Sec., Eldon C. Wagner, 2318 Rowley Ave., Madison, Wisc.
Nat. Dirs., A. J. Behling, 2326 S. 75th St., Milwaukee 14, Wisc.; Edwin J. Kallevang, Wisc. Power & Light Co., Madison, Wisc.

What's New

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1121 FIFTEENTH ST., N.W., WASHINGTON 5, D. C.

Please send information on Item 1 to:

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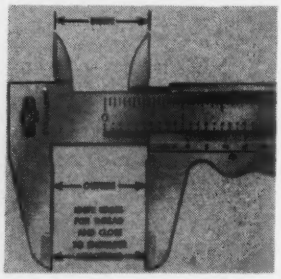
NEW MAUSER VERNIER CALIPER — Item 1



The George Scherr Company announces a new Model 101, stainless steel Universal Mauser Vernier Caliper for Inside, Outside and Depth measurements. The entirely new long Vernier has 25 lines covering 49 graduations of the scale. It features new gib construction of slide with hardened self-lubricating phosphor bronze spring gib, accurately machined and fitted into the narrow upper side of the slide. Has 3 Scales and Verniers to read 1/1000" lower front, 1/128" and fractions upper front, and 1/10 mm. on the back.

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PORTABLE ASPHALT PLANT — Item 2

To meet needs of construction industry for a completely portable, integrally-powered batch type asphalt plant, Standard Steel Corp. has developed and is placing such a unit on the market.

The plant is 1,000 pound capacity. Mounted on rubber-tired wheels. Complete with gasoline or diesel engine for operational power, it represents the last word in compactness. Mixing unit is raised by means of an elevator device.

In transit the plant complies with highway clearances involving both height and weight and may be towed with a truck-tractor.

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HANDY DECIMAL EQUIVALENT DECAL FREE — Item 3

Engineers, designers, draftsmen, etc., may secure free a convenient time-saving decal showing decimal equivalents in 64ths, from The Meyercord Co. The complimentary decal is only 6" by 1½" and is designed for application to slide rules, T-squares, drawing boards, desk tops and other similar drawing equipment. The figures are easy to read, printed in sharp black and red type on a white background. The company states they have enough on hand to fill any normal demand.

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GREEN CONVEYOR BELT REDUCES EYE FATIGUE — Item 4

For use on assembly and inspection lines where a great deal of visual concentration is necessary, a green, abrasion resistant conveyor belt has been announced by the Main Belting Company.

Extensive tests have shown that eye fatigue is substantially reduced when a green belt is used for assembling or inspecting such objects as radio chassis, tubes, small parts assemblies, shells, etc.

Main Abrasion Resistant, Green Inspection Belts are available in any width up to 132 inches.

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SPORTSMAN'S OUTDOOR SERVICEKIT — Item 5

The Servicekit is designed to give the sportsman, or field engineer a complete pocket pack that will enable him to handle practically all the emergencies that might arise during any of his trips.

Designed to be at hand when needed. Contains 37 items for equipment and clothing repair, first aid, and other emergencies. Weighs only 10 ounces. Developed by General Scientific Equipment Co.